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DISEASES OF CHINA

JEFFERYS and MAXWELL

THE DISEASES OF CHINA

INCLUDING FORMOSA AND KOREA

BY

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WITH 5 COLOURED PLATES, 11 NOSO-GEOGRAPHICAL PLATES, AND 360 ILLUSTRATIONS IN THE TEXT

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TO ALL PRACTITIONERS
OF
MEDICINE IN CHINA AND THE FAR EAST
THIS BOOK IS
CORDIALLY INSCRIBED

PREFACE.

It is necessary to emphasise that this book is not in any sense intended to be a general text-book of medicine, nor even to cover the whole ground of the diseases met with in China. Some of these, such as phthisis, pneumonia, and so forth, differ clinically in no respects from the same diseases as encountered in the West, and are therefore left untouched or only treated from the standpoint of their distribution or otherwise merely alluded to in these pages.

Our aim is to present to medical men working in China, both Chinese and foreign, a concise account of the special diseases they will meet with in their own practice in this Empire. A complete account of many of these diseases might be obtained from the voluminous literature of tropical medicine, and of most of those remaining from general medical literature. We present them in one volume of a reasonable size and with constant and special reference to their modifications as brought about by the hygienic habits and the racial peculiarities of the people of China, and draw our illustrative cases from practice among the same.

It has been possible only to allude here and there to questions and studies arising out of this vast and promising field for comparative medical research, the disproval and establishment of medical theories by reference and comparison with the conditions and findings under widely differing civilisations. Such questions are raised under discussion of the etiology of beri-beri, the relation of carcinoma and gout, plague infection, and at many other points, but we would emphasize that this field is enormous in possibilities for future usefulness and would warrant the attention of special research workers.

This work is illustrated very largely by photographs of diseased conditions among the Chinese; most of them being of our own taking and the majority having never been published. A certain number have appeared only in the *China Medical Journal*. Others have been taken, with permission, from recent works on pathology, parasitology, tropical medicine, and so forth, and acknowledgement is made in the text.

Complete acknowledgement has been made as far as possible of all sources of outside information and illustration in the text of the book. If there be any lack thereof it is altogether unwitting and we ask forgiveness for the same. We would express our special indebtedness to Doctor John Bell, Superintendent Government Civil Hospital, Hongkong, and Fleet Surgeon Edward Sutton, R. N., for their permission to use a number of most interesting microphotographs which will mostly be found in the chapter on Diseases Caused by Metazoal Parasites. Certain subjects have been felt to be best illustrated by cases and verbatim comments by the original reporters. Such quotations are printed in smaller type and the break in continuity may be avoided where desired by reading the larger type only.

THE AUTHORS.

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DISEASES OF CHINA.

CHAPTER I.

THE CONDITIONS OF PRACTICE IN CHINA.

I. Modern Scientific Practice.

It is with the **conditions of practice of scientific medicine** among the native people of China that we have to deal. The care of our own people in this land is entirely in the hands of a considerable body of well-trained physicians and surgeons, most of whom are in private practice and largely confine their attentions to their own nationals. The majority of these practitioners do more or less work among well-to-do natives, but their limited knowledge of the language and the conditions of the native life do not bring them in sufficiently close contact with the body of the people to warrant a claim to native practice. For the conscientious private practitioner, native practice is not yet available as a life work. It is the missionary physician, the port health officer, the customs surgeon, who are in "native practice" or in a position to study the conditions thereof; men whose support is not dependent on native fees. The trained native assistant with his certificate of proficiency, and even the Chinese student with his degree taken in Europe or America, is hardly yet able to make a living in practice. Yet there are several exceptions to this statement, both in the treaty ports and in the interior, and time will change things speedily.

Dr. Martin, in *The Awakening of China*, says of those practising medicine among the natives: "In treating the sick, a medical man requires as much **courage and tact** as if he were dealing with lunatics." This is a strong statement, but pregnant with truth. The truth does not lie in any lack of Chinese mentality, but between the ignorance of the people and the strangeness of the practitioner. The latter is a foreigner with strange and outlandish ideas and new ways. From his hair to his boots he is an unknown quantity. The people understand him about as well as he understands them and no better. If he speaks the language and understands it, half the difficulty of practice is immediately removed.

If he is a man of courage and of tact, four-tenths more. There remains a tenth which the foreigner will never remove.

There are **four positions** in which we meet the Chinese patient—*in itinerary work; in his home near the hospital; in the out-patient department; and in the hospital.* They are satisfactory from the practitioner's standpoint in the reverse of the order given. Itinerary practice, except as a form of advertisement (and we use the term in a legitimate sense) is in our opinion a waste of time.[1] Infrequent visits to new groups of patients, with scanty supplies, among strangers and unsought, are conditions practically prohibitive to satisfactory results. Even as a measure of drawing patients to the hospitals we believe that the general impression is that it is thoroughly unsatisfactory. The practice of medicine in native homes is a step in advance. One is called, and therefore wanted; one is in a position to ask a satisfactory fee, and one's services are therefore appreciated, and, having paid for the services, an attempt will be made to follow out the directions. But the conditions for obtaining results in either medicine or surgery will not prove encouraging. Medicines are irregularly administered or not at all. Dressings are changed, removed, and fussed with; native physicians are called in and native drugs administered between visits.

"We have known a patient to swallow a sulphur ointment for a cough and rub a cough mixture three times daily over the body covered with itch! Then again our medicines are often augmented by Chinese nostrums on the principle, we suppose, that two *halves* make one *whole*."—*D. Main, Hangchow.*

One is not supposed, according to Chinese etiquette, to make a subsequent visit unless invited to do so, and therefore no systematic treatment can be instituted. If things go well one may be called again. If things go badly, one certainly will not be.

"A Chinaman is not apt to apply for more medicine unless the first he gets does him good."—*Park, Soochow.*

We were called to Nanking to attend the son of the viceroy of the Liang Kiang provinces and allowed to make a thorough study of the patient. The study developed the desirability for a lesser and a greater operative procedure. The greater was immediately refused; the lesser, subsequently so. It appeared that there were eight native physicians living in the Yamen attendant on the patient at the same time as ourself; that the average stay of each was a few days; that every foreign physician in the city had seen him; that two foreigners from our own city as well as ourself had seen him, and that every native practitioner of prominence for six hundred miles up and down the river had also been in attendance. What is true of the Yamen is true of every other Chinese house, in proportion to its means.

---

[1] Many will not agree with us in this statement. We, however, contend that there is no factor more potent in building up medical work than regular attendance at a fixed point. This opinion refers alone to the professional aspect of work.

> "It is difficult to deal with chronic disease of many years' standing. Yet you feel you must do something to satisfy them as far as you can, but to give a man who has a tumour on the back of his neck, who refuses to enter the hospital and have it excised, a 6-ounce mixture to dissolve it as the patient suggests is, to say the least of it, unsatisfactory. Their faith in the dissolving power of some of our remedies is much greater than ours."—*Main, Hangchow.*

Having said this much, it must be admitted that there yet remain certain occasions for profitable practice in native homes. In those who have been sufficiently in touch with foreigners to understand something of their ways, and in such cases as require little nursing, and **in all difficult obstetric conditions fairly satisfactory results may be hoped for.**

The conditions of practice in China are supposed to vary greatly, and ever in favour of the man who works in a treaty port as against the man in the interior and off the beaten track. Results, however, do not prove this supposition, and results are what we are seeking. The man in Chungking or in Hwaiyuen does exactly as good work as the man in Amoy or Shanghai. Some of the best reports and observations come from the far interior; some of our best surgeons are six hundred and a thousand miles from the sea. Undoubtedly there are conveniences to be found in Shanghai that do not exist in Paotingfu, but it is twice as easy to learn Chinese in Paotingfu as in Shanghai, there being fewer interruptions by far. In the interior one must do one's thinking and planning earlier, but one has more time to do it in.

The first and great condition of practice in China is **the foreign physician himself.** China is the last place in the world for any man to come whose qualifications and training are incomplete. We have noticed that those who come to China well-equipped keep themselves well-equipped. Those who come to China insufficiently educated, progress ively lose even the little that they have. China is the last place in the world to study the principles of medicine—the finest place in the world to find clinical material.

We believe that it would be well for every man who comes to practise among the Chinese to specialise. The field is enormous, the patients are unlimited; it is quite as easy to get a thousand eye patients or skin patients or general surgical patients as it is to get a thousand mixed patients. In fact, the Chinese take to specialising with readiness. When one realises that the great professional aim of the China Medical Missionary Association is acknowledged to be educational, one sees the uselessness of sending incompetent, partially trained physicians to this land. The Chinese are able to appreciate the difference between a good man and a poor man quite as well as—perhaps more readily than—the Englishman or the American. What he looks for is relief, satisfactory and permanent. The Chinese student is thoroughly able to appreciate a good education and only too quick to take in the shortcomings of his instructor. The successful colleges are those which give the best education. The successful practitioners are those who give the best practice, by which we mean the fullest equipment of scientific training and skill, devoted, with courage and tenderness, not ultimately to the making of "an exact terminological diagnosis," but to the relief and cure of the man. It is not true of the medical profession of to-day that it is too scientific, but that it is too self-centred. It thinks too much by far about its own intellectual comfort and too little about the personal comfort of men which is after all its *raison d'être*. If this be so, and the profession knows at heart that it is so, it is particularly in place to speak of it in connection with our practice among all non-scientific and alien races, among whom we meet with many temptations to callousness and that fatal sense of impersonal irresponsibility. For this reason men with little minds and little hearts should be kept at home where there are competition, laws, and social oversight.

Physically (quoting from *Health Hints to Missionaries*),

> "The type of worker needed for China is the man who will 'stick'—the man who can endure, who can plod on in patience, who has a level head and who is gifted with sound sense. Nervous, neurotic temperaments suffer from the friction and strain of life and climate and soon come to grief. Therefore we would most strongly emphasize the need of special care being taken to ascertain the past history and family history of candidates with regard to nervous diseases.
>
> "We have often seen nervous prostration as the result of climate, language, and surroundings. Investigation has revealed a history of previous breakdowns and the fact that the sufferer came from a neurotic family.
>
> "Those who suffer from any bowel complaint, *e.g.*, dyspepsia, constipation, or a tendency to diarrhœa, need to take especial care when coming to China. Often an old original weakness becomes magnified under the conditions of life and climate here."

At the last conference of the China Medical Missionary Association the following resolutions were adopted:

1. That boards require their medical mission candidates to show evidence that they have made **a special study of tropical diseases.** Preferably that they have taken a practical course in tropical medicine or at the very least have attended a course of lectures on the subject and have been thoroughly trained in practical bacteriology and microscopic methods.

2. That as it is of the highest importance that medical missionaries should have **a good knowledge of the Chinese language,** spoken and written, and should early gain some experience of existing mission methods, the Association urges the importance

of relieving them of all responsible work during their first two years in the country, of requiring them to pass examinations not less searching , if on different lines, than those of their clerical colleagues, and locating them for a time in established medical centres.

Resolution No. 2 states the principle of the truth of which there is no possible doubt—that satisfactory practice cannot be engaged in in this land without a good working knowledge of the Chinese language. Even two years is insufficient for more than a basis upon which active practice may be undertaken.

The first year should be given to the language alone. During the second year, a certain amount of dispensary work may be undertaken for the help which it gives in hospital dialogue. Here is a sample.

"We seat ourselves at a desk, a bell is rung by the head assistant, the students go to their respective duties, three to dress the surgical out-patients and two to attend to dispensing. The first patient comes awkwardly in. The steel door mat is a novelty to him; he walks around it to get to us, and is very careful where he places his bootless feet.

"In a bewildered way he looks around, and we tell him to sit down. His bamboo tally is taken from him, and he at once starts on what would be a long story of his trouble, but a question is put to him.

"'What is your name?'

"'Ah!'

"'What is your name?'

"'Fever every second day; it began——'

"'Listen! What is your name?'

"'Name Wang. I've had fever for over two months; my——'

"'Where do you live?'

"'The Wang family village; the fever is very high; he has taken medicine and is no better; please give me good medicine. The doctor has a great name——' Poor fellow! he cannot get on, for another question is put to him.

"'Is it you or somebody else who is ill?'

"'Both of us. I came for medicine; it is a very long way——'

"'If two people want medicine both must pay the entrance fee. How far do you live from the city?'

"'I started after my early morning rice.'

"'Is it over thirty *li?*'

"'Over twenty *li*.'

"'What is your age?'

"'I was born in the year of the dragon.'

"'Ah! How much are you over thirty?'

"'I'm only twenty-nine.'

"At last we have got the facts we want to enter on our register, and now ask if he has got malaria.

"'Yes, my fever rises every second day; his is every day.'

"'We have told you already that one tally only does for one patient.'

"'Ah! I'll get another; he has scabies too all over him.'

"We begin to write his prescription, and his attention is attracted by the queer foreign pen and the extraordinary marks it is making. He gets up and comes as close as he can to inspect it. This is something to talk about when he gets back to his village; he must have a good look!!

"The assistant gives him his prescription, with his hand on the bell impatient to ring in another case, but giving him at the same time careful instructions as to taking the medicines.

"'Is it drinking medicine or dry medicine?'

"'It is drinking medicine.'

"'Ask the doctor to give me dry medicine. I have not got a bottle.'

"'You can buy one from the doorkeeper. Take your prescription and get the medicine from that window. When your medicine is finished, come back again. There are six days' medicine here. Do you understand?' The bell has rung and another patient has come in, but still our former patient sits there till the assistant takes hold of him and gently pushes him to the door. With a sigh of relief we both of us apply ourselves to the next case."—*Fowler, Hiaokan.*

It will be folly to give up the habit of regular work with a Chinese teacher or writer as long as one is doing medical work in China. New terms are constantly required for the writing and translation of numerous medical papers and prospectuses. The translation of books, the writing of letters, and so on are so much the part of everyday work for the educator that the constant and regular association with a native writer is an essential.

It was early realised that the medical education of the Chinese could not go very far without **the provision of a medical literature** in the native tongue. The translation of medical books has therefore become of paramount importance to the educator. The future medical literature of China will probably be of varied origin, of which the two chief factors will be the products of the Publication Committee of the China Medical Missionary Association, and the adaptation of Japanese medical works. It is not clear at present which of these two influences will be paramount. Though using the Chinese characters, Japanese medical works are not at present intelligible to the Chinese, but might be made so, and such nomenclature as they have might be made to do something for China to-day. Vast strides have been made by the China Medical Missionary Association since twenty years ago when each translator made and stuck to his own scheme of terminology. The Publication Committee consists of nineteen or more members actively engaged in medical education, with a thoroughly equipped, permanent secretary resident in Shanghai. **A Chinese Medical Dictionary**, carefully worked out from all sources by a permanent Terminology Committee of the Association has already been issued, and as it is the combined product of scientific foreign training together with skilled native literary effort, and has for years used every available source of help, it stands a fair chance of becoming at least a basis of future medical terminology for China. The scheme of the Publication Committee includes the reproduction of a complete series of medical text-books, translations of the best literature of the world, and ultimately the regular production of a good medical journal in Chinese. Every publication of the association is required to use the terminology of the committee.

The second condition of practice in China is **the Chinese patient,** and that is a very constant factor throughout the empire. The Hunanese and the Cantonese are equally diseased and equally eager to be cured; equally dirty and suspicious, and equally courteous and docile. The Chinese patient should be met invariably as a man, reasonable, sensible, strange in some ways, but always intensely interesting, and underneath the veneer of a naturally and acceptedly different civilization, fundamentally human and of a quality of human above the average and above ourselves in some ways, as we soon learn if we are wise and observant. We should not expect a Chinese to do things in other than Chinese ways, and we will find, as time passes, that we will often enough regret that he has seen fit to copy ourselves in some of our ways. Within the past month, two of our own assistants have taken off their cues and the change is neither to their cosmetic advantage nor to our æsthetic satisfaction.

> "The suspicion and distrust of the people in former days made a death in the wards a very undesirable thing. We were afraid to run many risks in operating and most carefully selected our in-patients. To-day we have so far gained the confidence of the patients and the public generally as not to hesitate to undertake the most desperate cases. In every case we get full credit for our attempts at healing and not a word of reproof or complaint reaches our ears."—*Fowler, Hiaokan.*

You will save yourself endless trouble and your patients endless ingenuity if you will limit your rules to the bare necessities, and extend your elasticity to the utmost degree short of, and sometimes past, the breaking-point. The following are about the only rules now in force in St. Luke's Hospital, Shanghai:

"Patients, except by special arrangement and in emergencies, must deposit two dollars or find a guarantor on admission to the wards. Private patients are exempt.

"Patients are forbidden to gamble in the hospital buildings.

"Patients are forbidden to leave the wards without permission." [This is an excellent rule to break.]

"Patients are forbidden to cook or heat water except on one of the stoves provided for the purpose.

"The treatment advised must be accepted or the patient must leave the hospital." [This is absolute].

That is all. Patients may smoke and talk all night. Nobody cares. Friends may come and go, or not go, as they please. They often sleep on the floor near their sick. They eat the hospital food, if they pay for it.

We remember going in to see a patient an hour or two after a most serious operation and finding more than fifteen friends gathered round his bedside, "mong-mong"-ing him, as they say here. When we asked him if he would not like some of them to retire, he said, "Oh, no, these are my village"! Well, he recovered, in spite of the village, and now we get patients from that village as regularly as the months go by.

We have one more rule, and that is to say "Yes" to whatever request is made, unless there is some overwhelming reason against doing so. There is no doubt whatever that even if things are a bit irregular at times, on the whole the hospital is far more homey and far more human than eleven-tenths of our rule-trodden institutions in the dear homeland, and it suits the Chinese patients very well indeed.

There is a very general impression among foreigners that the **pain sense of the Asiatic,** particularly the mongolian races, is not nearly so highly developed as in other races of men. The statement is made that this is so, not only by laymen, but widely also by physicians. It is, however, in our estimation based on superficial observation. We believe the facts to be as follows: Physico-psychological experiments have shown that the sensory nerves of the skin and so forth of the Chinese are in all lines as responsive to stimuli as those of the white races. Surgeons will, if they differentiate in the matter, observe that the Chinese, with the exception of practically all but the coolie class, suffer mentally and physically, are as restless and impatient, as fussy and exacting as the average white patient, and the Chinese patient of the upper classes will compare favorably in difficulty of control with the pampered neurotic and *passé* fad-indulged food-hypochondriac of Boston. It is the coolie classes that give the opposite impression, and with them it is not a question of suffering less pain, but of bearing it better. They are inured to lives of want, hard conditions, struggle, and cheerful submissions. They expect to suffer, and expect little relief and care. They are more patient, more courageous, and less mentally exacting than even our own patient and insufficiently considered poor. All honor, say we, to the poor coolie. The argument is not to economise on local and general anæsthetics, not to harden the conscience and roughen the hands in their care, but, on the contrary, to give them the utmost of consideration and patient attention.

We read once of a certain clinic in China, which had better remain nameless, where the surgeon opened so many abscesses, even amputated fingers, without using any anæsthetic, "because the patients seemed to suffer so little pain." Our private opinion is that the imagination and mental acumen of the said surgeon would have fitted him for transmigration into **the future habitation of a pincushion.**

With regard to **the value of life,** it is true that the Chinese do not so highly value it as we do. They are a fatalistic people and live, many of them, so near to the line beyond which life loses its worth-the-whileness to them, both as regards each other and especially as regards themselves, that suicide or passive non-interference are often and easily reached. This is clearly stated by Field-Marshal Viscount Wolseley in his *Story of a Soldier's Life* (Vol. II., p. 94.).

> "They had nothing but life to lose, and the Chinaman does not regard its possession as highly as we do. We make a fetish of human life, and guard it round with every sort of shield and buckler that human ingenuity can devise. We invest death—the surrender of that life—with every earthly and repugnant horror that imagination can invent, and are frightened by priestly stories of the everlasting torments and misery our souls may possibly, if not probably, have subsequently to endure forever in an unknown country, from which return is impossible. But not so with the Chinaman; death has few horrors for him. To him it is as natural to die as to be born, and unless death be accompanied by torture, to have his head cut off cannot be much worse than having a tooth drawn."

We have spoken of the aim of medical work among the Chinese as being **educational**. As physicians, we believe that we have in the science of medicine from every standpoint a common treasure of mankind. It is the common property of every human being, or may be made so. The Chinese people, nearly a third of the population of the world, are without its benefits, except in so far as we have already transmitted them. This is a major aim of the medical profession in China, to give scientific medicine to the Chinese people. It requires, first, their acquaintance and familiarity with the principles and practices of scientific medicine, that they may be ready to accept it; second, their education in the science; and, third, their protection from quackery, patent medicines, and the other like camp followers of the army of healing.

Admissions and Mortality in the Tung Wah Hospital, during the year, with the proportion of cases treated by European and Chinese methods, respectively.—Hongkong, 1905.

General diseases	Admissions			Deaths		
	European treatment	Chinese treatment	Total	European treatment	Chinese treatment	Total
Net total treated. . . .	1,237	1,209	2,446	370	477	847

The first point has been already attained largely through the activity of missionary physicians and their trained students and assistants, and to them almost alone belong the honour and satisfaction of this most

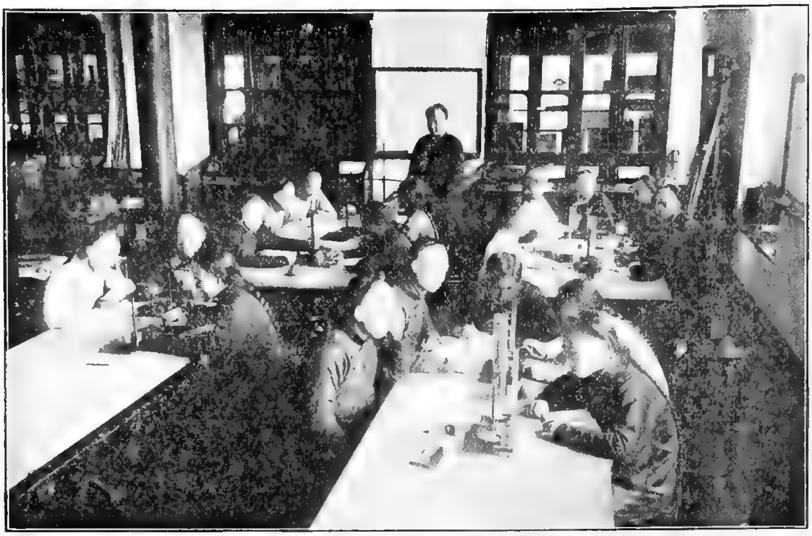

FIG. 1 Physical laboratory, St. John's University, Shanghai.

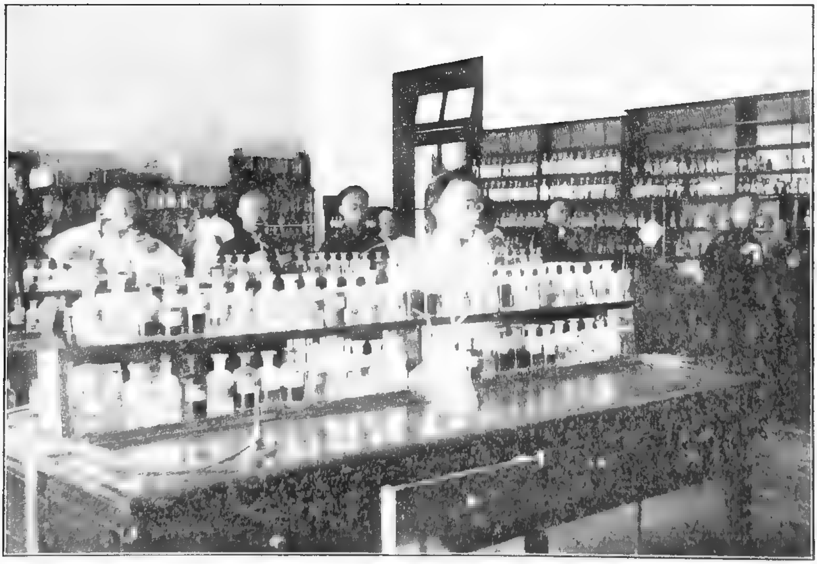

FIG. 2. Chemical laboratory, St. John's University, Shanghai.

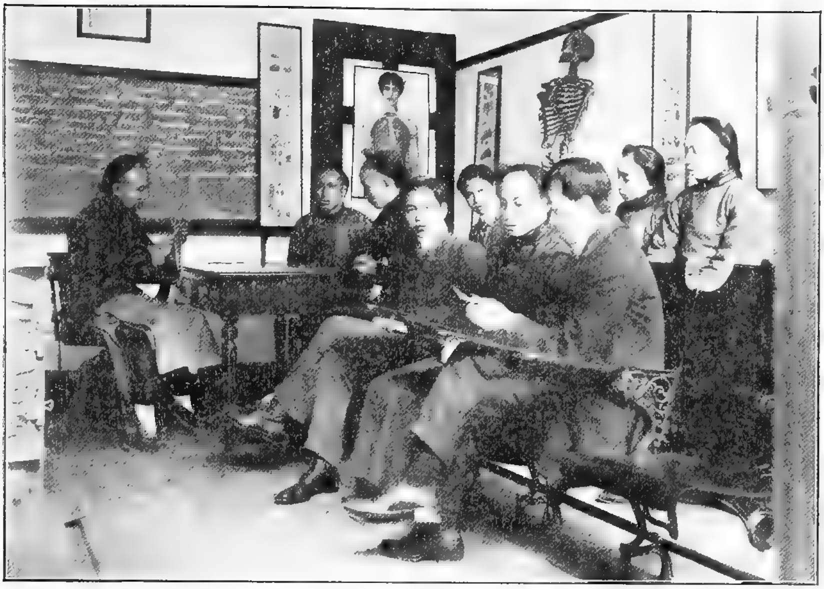

FIG. 3.—Class in minor surgery. St. John's University, medical school, Shanghai.

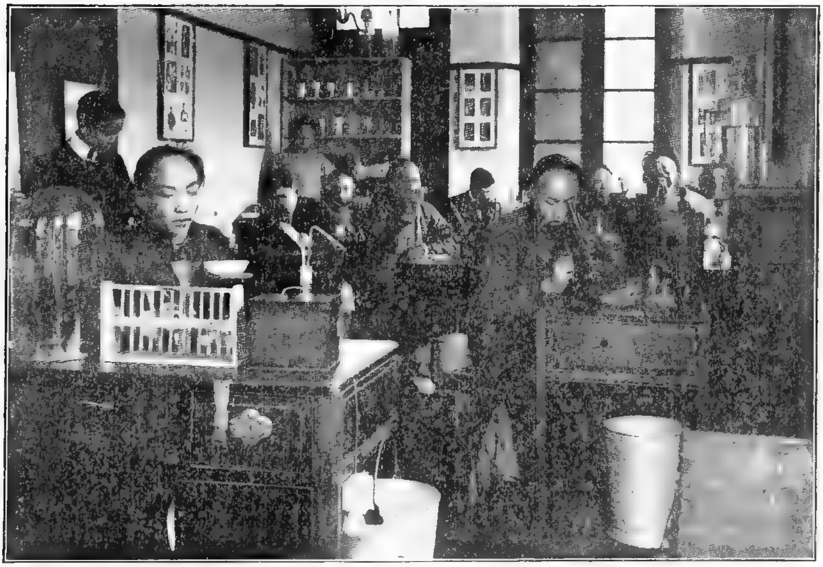

FIG. 4.—Class in laboratory methods. St. John's University, medical school, Shanghai.

difficult accomplishment. The second is to be the joint product of numerous forces, beginning in a small way in the training of assistants, hospital nurses, orderlies, and so on in the four hundred and more hospitals of China; and passing from these small beginnings into the more modern ideas of ten or twelve strong medical schools under Christian influence in important centres. The medical missionaries again have paved the way which is now opened to other influences. The Chinese are themselves organizing small medical schools with mixed professorships consisting of Japanese, returned natives from foreign schools, and so on. The Germans are establishing a medical school in Shanghai, which promises to be an important centre of German medical influence. The British have the makings of an excellent school in Hongkong. So far, only one school is recognised by the Chinese government besides their own school in Tientsin, namely, the Union Medical College in Peking. But three or four institutions—St. John's University, Shanghai, Soochow University, Boone University, Wuchang, and others—are incorporated under American laws and are therefore able to give American degrees. These undoubtedly will eventually obtain government recognition for their graduates if they desire it. At present neither license nor examination of any kind or description is necessary for the practice of medicine in China.

The **native Chinese has many qualifications** for making a worthy practitioner of scientific medicine, and, like the Japanese, may be depended upon to enhance the honour of our great profession by adding the strength of native talent to the sum total. We find the following characteristics exemplified among our own students and assistants and have reason for believing that they represent the average of the best: excellent memory for facts and detail; faithfulness in carrying out methods once adopted; marked powers of observation; and the most extraordinary devotion to the principle of hard work that we have ever seen among any people; great delicacy in all operations involving the use of the hands, and particular fitness for, and adaptability to, the intricate and time-consuming problems of original investigation, and especially the use of the microscope. We have had students to whom the microscope became the recreation of life and to whom the power of observation was apparently a part of nature. On the other side of the account we must write down a considerable shortage in the matter of professional judgment and in ability to organise, control, and discipline their own subordinates; a tendency to do the operation as laid down in the book without balanced application to the individual; and an overwhelming tendency on the part of some to adopt the methods of quackery and charlatanism. But we must guard this statement by emphasising the fact that this is only applicable to individuals and that it is merely more prominent as a fault than among our own fellow-countrymen. We have the highest respect for our own assistants, who never fail in courtesy, in loyalty, or in application. The day will come when they must take their place as chiefs, as colleagues on an equal footing with ourselves, when they must take upon themselves the burden of directing the ministry of medicine among their own people; and we face it with considerable confidence.

II. The Old Empirical Practice.

For the practice of medicine in China it is more than a matter of academic interest that one should have a clear idea and a proper appreciation of **the native practice of the country**—and by this we mean the old empirical practice of medicine and surgery, of its position in history, its value and its faults, and its relationship to scientific medicine. Let us appreciate in a generous spirit and freely acknowledge that our own practice is dimmed and occasionally blackened by the shadow of graft, superstition, and charlatanism. These are not the practice of scientific medicine nor are they any part of it. They are the camp followers, parasites, and the refuse of past days. If this is true of our great profession, is it any wonder that we find in the native practice of China the same thing exaggerated a hundredfold? Not only is this true in the sense that it is mixed in with the general medical practice, but, what is not true in our own situation, it is a part, and a large part, of the medicine of China. And yet there is a rational, semi-scientific, and certainly dignified, empirical practice which dates back for hundreds of years, which represents the thought and experience of many bright minds, and deserves the respect and consideration of our larger outlook. It is of this worthy practice, inefficient and blundering though it may be, that we are writing, that we may see what good there may be in it, and bespeak for it a definite consideration.

Cobbold, in *The Chinese at Home* (p. 28), says: "Healing is with them most decidedly a science. They have indeed their quacks, as we have, but the regular practitioner is one who treats diseases according to certain rules and who never puts patients to torture or to death save strictly *selon la règle.*" The *règle* is somewhat as follows:

According to Chinese philosophy, there are **five elements**—gold, wood, water, fire, and earth; and the human frame is made up of a harmonious mixture of the same. So long as the proportions remain proper, the body is in harmony and therefore in health; but if any one element predominates, so as to get the upper hand as it were, the system of things is deranged and the body suffers. Thoroughly to understand such a system, as Mr. Cobbold says, we must get rid of a great many preconceived opinions. But "it is intimately connected with our (the native) physician who, in any derangement of the stomach, has to ascertain which of the five elements is preponderating, and then to counteract its influence by proper antidotes." For example, fever is too much fire, and requires water to put it out. "This is the orthodox system of medical treatment, and a foreign physician who does not adopt a little of their phraseology has but a small chance of success in gaining and helping patients." This remark is applicable to the interior to this day, and even in Shanghai we find it helpful to be familiar with the native phraseology.

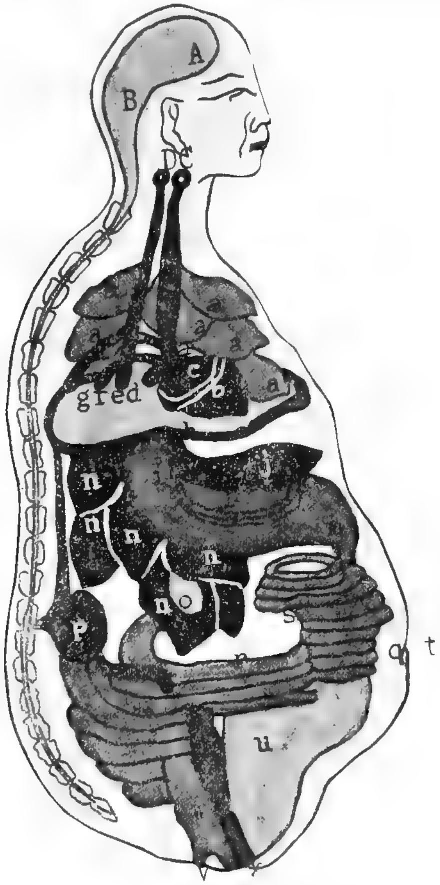

FIG. 5.—Chinese notions of the internal structure of the human body. *A*, *B*, Brain; *C*, larynx; *D*, pharynx; *a*, *a*, *a*, *a*, *a*, lungs; *b*, heart; *c*, pericardium; *d*, bond of connection with the spleen; *e*, œsophagus; *f*, bond of connection with the liver; *g*, bond of connection with the kidneys; *h*, diaphragm; *i*, cardiac extremity; *j*, spleen; *k*, stomach; *l*, omentum; *m*, pylorus; *n*, *n*, *n*, *n*, *n*, liver; *o*, gall-bladder; *p*, kidneys; *q*, small intestines; *r*, large intestines; *s*, caput coli; *t*, navel; *u*, bladder; *v*, the "gate-of-life," sometimes placed in right kidney; *w*, rectum; *x*, *y*, urinary and fæcal passages.

It is not a true statement that the Chinese know nothing **of anatomy and physiology**. They have intelligent ideas as to the locality of organs and their mutual relationships, such as any observant people might gather in the course of time; and to some extent they have an appreciation of the functions of the different organs of the body. But dissection of the human body is never attempted; the learning on these scores has therefore its strict and evident limitation. For example, venous and arterial blood are not differentiated. Tendons and nerves have the same name.

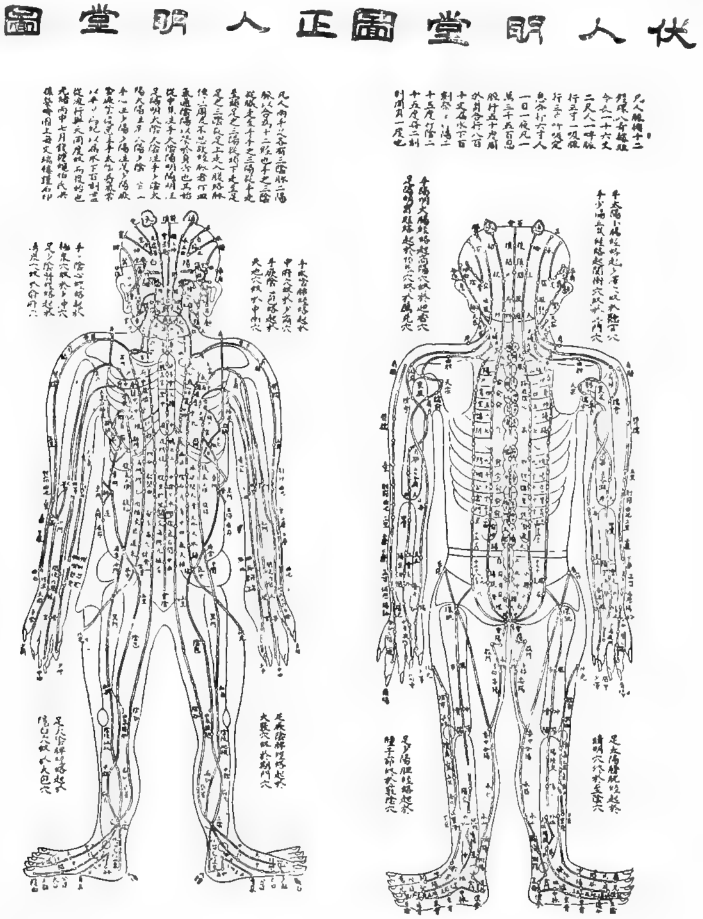

FIG. 6.—The air channels, taken from the standard work on medicine.

"The brain is the abode of the *yin* principle in its perfection, and at its base, where there is a reservoir of the marrow, communicates through the spine with the whole body. The larynx goes through the lungs directly to the heart, expanding a little in its course, while the pharynx passes over them to the stomach. The lungs are white and placed in the thorax: they consist of six lobes or leaves, suspended from the spine, four on one side and two on the other; sound proceeds from holes in them, and they

> rule the various parts of the body. The centre of the thorax (or pit of the stomach) is the seat of the breath; joy and delight emanate from it, and it cannot be injured without danger. The heart lies underneath the lungs and is the prince of the body; thoughts proceed from it. The pericardium comes from and envelops the heart and extends to the kidneys. There are three tubes communicating from the heart to the spleen, liver, and kidneys, but no clear ideas are held as to their office. Like the pharynx, they pass through the diaphragm, which is itself connected with the spine, ribs, and bowels. The liver is on the right side and has seven lobes; the soul resides in it, and schemes emanate from it; the gall-bladder is below and projects upward into it, and when the person is angry, it ascends; courage dwells in it; hence the Chinese sometimes procure the gall-bladder, of animals, as tigers and bears, and even of men, especially notorious bandits executed for their crimes, and eat the bile contained in them, under the idea that it will impart courage. . . . The small intestines are connected with the heart, and the urine passes through them into the bladder, separating from the food or fæces at the caput coli, where they divide from the larger intestines. The large intestines are connected with the lungs and lie in the loins, having sixteen convolutions."—(*Williams' Middle Kingdom*, Vol. II, p. 180–2).

To become a physician, a Chinese states to his friends and neighbours, "I am a physician." This is the limit of required preparation, although it is usually a development from a former apprenticeship. His diploma is the more or less handsome signboard which announces his determination to the neighbourhood. The man whose father or uncle was a physician before him has the supposed advantage of inherited recipes and secret family remedies; and the farther back the medical ancestry, the better.

> "Native doctors do not know much and have forgotten much of the little they ever knew, and they are forever pouring drugs, of which they know little, into bodies of which they know less, and think nothing of putting a rusty needle into a patient's abdomen or clipping off an old-standing opacity of the cornea, and sticking a dirty needle into an opaque lens in order to improve the sight!"—*Main, Hangchow.*

The Chinese physician is usually a middle-aged man of dignified bearing, and his personality has much to do with his success. In the matter of ethics he has not much to boast of. He never does any earthly thing for anybody unless there is money in it, and he makes his deal in advance—so much down and so much guaranteed in case of cure. If he ever comes across a happy discovery, he buries it deep in his heart, strictly for personal and private use. When visited by a patient in his open shop along the thoroughfare, where he sits behind a table covered with the paraphernalia of his trade, or when he visits in the home of the rich, he places the patient opposite his august self and begins and ends by feeling his various pulses two at a time. On the condition of the pulses depends much. It is customary to ask a few questions and listen to the patient's own story. He then writes a prescription for first-, second-, or third-rate medicine, according to the ability of the buyer. It is probable that a medical visitation is never completed without the administration of one or more drugs. No patient would be satisfied without them.

The **pharmacopœia of China** is enormous and largely of vegetable origin—leaves, flowers, bark, the shaved stalks, the seeds of a legion of shrubs, trees, fungi, and so forth going to the making of powders, decoctions, and poultices.

> "The poetic nature of the Chinese is evident in the nomenclature of some of their drugs. The following are literal translations of some of the native names:
> "The arrow of the hundred medicines.
> "The stone which the sun vaporizes.
> "Water dragon bones (old caulking of ships).
> "Thunder pills.
> "The king of the field boundaries (a weed).
> "The grass which the deer picks.
> "Opium weaning grass.
> "Head-turned chicken (a dried fruit).
> 'Golden antique olives.
> "Thousand taels worth seed.
> "Sure remedy (the bark of a tree).
> "Robust the whole year (certain bulbs).
> "Phœnix bowels (the phœnix is a beneficent animal like the dragon, and is the special emplem of the Empress as the five-clawed dragon is of the Emperor)."—*H. Martin Clark, Weihweifu.*

Inorganic drugs also enter largely into the practice. Neal, of Tsinanfu, Shantung, has made a very complete report on the inorganic native drugs of that city.[1] The list is considerable, and includes alum, ammonium chloride, borax, calcium sulphate, lead carbonate, lead monoxide, mercuric oxide, calomel, nitre, pumice stone, sodium carbonate, sulphur, zinc carbonate, and a host of others.

The preparations of these drugs are crude and impure, and their use has little regard for their known therapeutic values. Calomel, however, is used as a purgative and for syphilis, and a few other such rational practices are followed. A long list of other mineral preparations is entirely irrational—clam shells, pebbles, chalk, mica, and the like. Strong alkalies are used as escharcotics, for the removal of tumors, and so forth.

Among the **drugs of animal origin** the most grotesque practices appear. Firstly, the parts of animals are variously prepared and administered with reference to the supposed need of the patient tiger bones for the weak, since the tiger is so strong, and so forth. The excreta of both animals and man are frequently administered. The urine of a child is a common draught for sexual impotence. Fresh and dried specimens of all sorts and kinds of reptiles and insects are found in the Chinese apothecary's shop, and particularly on the street-stands of the irregular practitioners. Certain of these (as in our use of cantharides) are used as counterirritants or blistering poultices. The long common centipede of China is so used, and the scorpion.

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[1] *China Medical Journal*, 1895, p. 93.

"Severe dermatitis was evidently caused by the patient having taken as medicine for stomach trouble six hundred white grub worms found in the roots of the hemp plant. These had been cooked in oil and taken in ten doses, six hours apart." — *Johnson, Ichowfu.*

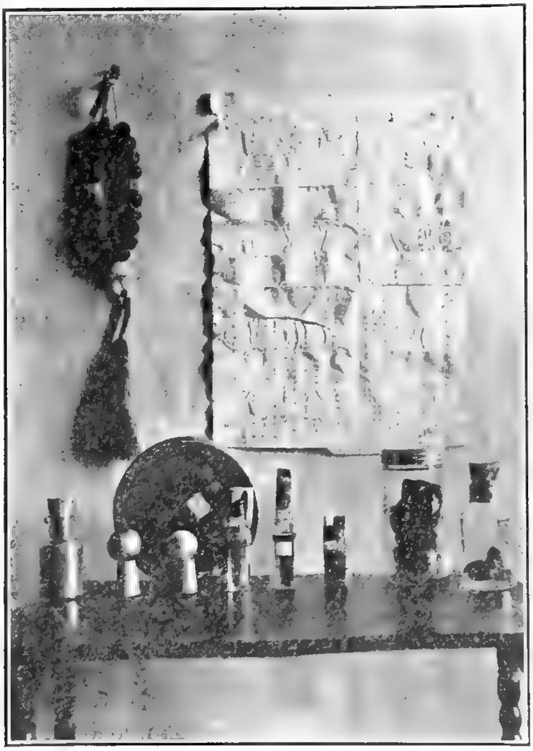

FIG. 7.—Some typical Chinese remedies. Over the table is a bracelet to keep off cholera. Underneath is the round box in which it came. On the table from left to right: a dose of dragon-festival powder to ward off evil spirits, a pill for a cough, with directions for taking the same, hanging on the wall; a pill for a child; small pills, 150 to a dose; oil of peppermint; morphine pills to cure the opium habit; pieces of tortoise shell and locust shells, both being nervous sedatives. (*By Jefferys.*)

The most expensive and the favourite drug of China is **Korean ginseng.** The ginseng from other places sells at a much lower figure, being of supposedly lesser therapeutic value. The chief use of the drug is in matrimonial unproductivity. The drug is presented usually in pill form, the ground-up root being made up into a mass of varying size, from a pea to a walnut, and placed for safe-keeping and sold in a paraffin-wax case, in which it rattles around and from which it is broken out immediately before masticating and swallowing.

Plasters are of two varieties –the cheap and the expensive; the cheap being prepared on thin paper, the expensive on stiff, cloth-covered card. The most commonly used plaster contains opium, anodyne in its effect. Others are usually counterirritant. Often plasters are used to seal up sinuses and prevent the escape of blood and pus.

Without passing into the realm of the utterly absurd or into the domain of demon possession, witchcraft, spells, sorceries, incantations, and so on, there is a general use of amulets and charms which are hung about the neck and consist of coins carrying certain characters and lucky dates, jadestone ornaments, incense beads, and so forth.

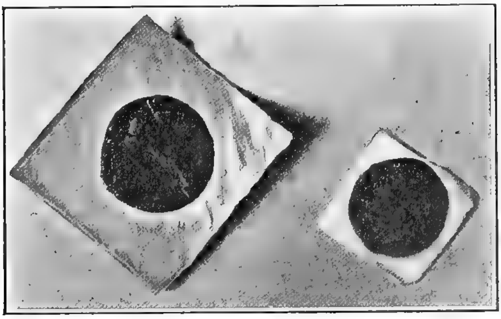

FIG. 8. Chinese plasters. (*By Jefferys.*)

Certain **non-surgical instruments** are used also in frequent practice—the fortune-teller's disc, for lucky days, recoveries, and the like; the crystal tortoise-shell rimmed spectacles, dark for weak eyes, convex for old sight; the verdigris-covered copper cash which are sucked for indigestion, and so forth.

An average, very modest, **prescription for cough** is as follows: Baked barley, sugar, mashed beans, bamboo shavings, a root, another root, still another root, chalk, melon seeds, mashed and fermented melon seeds, a mashed pebble, some wild flowers, a broken clam shell. The prescription calls for the boiling of these ingredients together with a large quantity of water, the whole to be taken quickly in one dose. It does seem as though the doctor might hit the mark somehow with so many shot in his gun.

Dr. Williams sums up the matter of therapeutics by saying, "Anything, indeed, that is thoroughly disgusting in the three kingdoms of nature is considered good enough for medical use," and we might add that the Chinese do not take their medicine as we do. They eat it, so large is the size of the average dose.

Surgery.—In contradistinction to "nan-kou" or internal medicine, there is a small amount of "wai-kou" practised. Under this heading the procedures of regular practice are extremely few. They include the use of plasters and poultices, the application of hot cash for counterirritation, the scraping with the edges of cold cash for the same (these are the cause of the round red marks and the long red marks on the necks and chests of the Chinese who employ them), the use of powder blowers for the insufflation of snuff and other pulverized drugs into the nose and ears and on the surfaces of ulcers and so forth; the **deadly acupuncture needle,** which is the favourite Chinese instrument of professional torture. It is a long, thin steel needle, usually wrapped at the end with copper wire; which may, or may not, be heated, and is thrust into the "hundred points" of election. It may penetrate into any part, including the abdominal cavity, the eyeball, and hernial sacs, though it is more frequently confined to the extremities and used for tumours and abscesses. The heated needle does not usually cause infection. We have operated on hernias that have been frequently needled without producing peritonitis. (N.B.—They may have been reduced before puncture.) The eyeballs are very often spoiled by puncture. The cold needle is a much more deadly

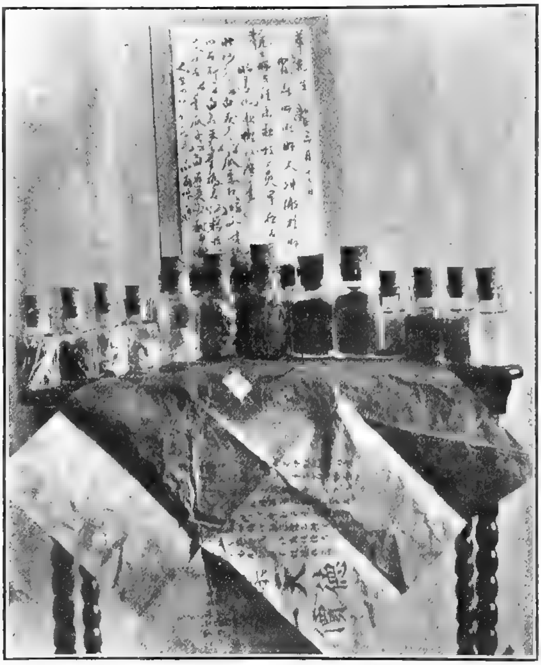

FIG. 9. A Chinese physician's idea of how to cure a cough. Thirteen drugs and their red-paper wrapper. The ℞ is seen above. (*By Jefferys.*)

weapon. The worst results we have seen have been from puncture of aneurism (twice) with rupture and tremendous subcutaneous hemorrhage.

Knives are used in native surgery, but are not made for the special purpose, being merely selected from the assortment of the hardware shop or knife vendor, and are designed chiefly for wood-carving. Small tumours are occasionally removed, boils and abscesses opened. In the case of certain daring ones we find the history of a few true operations having been performed, some of considerable magnitude, such as podalic version, perineal lithotomy, and so forth.

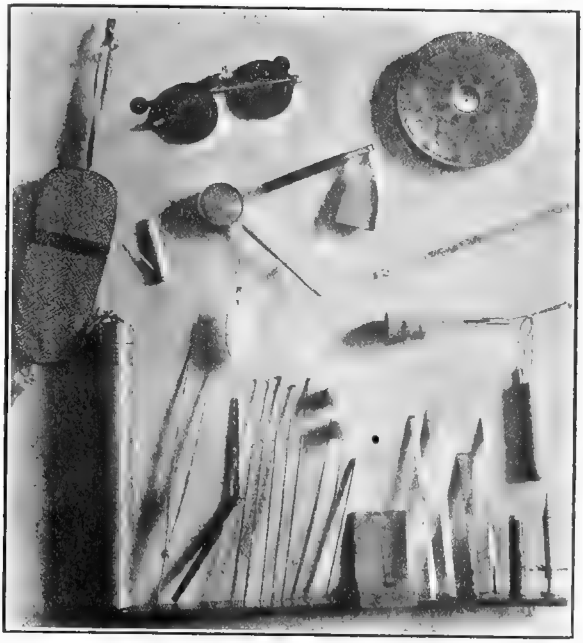

FIG. 10.—Some instruments from the equipment of a Chinese physician. The group includes, among other things, spectacles and case, razor, ear-cleaning instruments and case, four surgical knives, native-made hypodermic needle and case, acupuncture needles, fortune-teller's disc, etc. (*By Jefferys.*)

For the use of the **barber's ear-cleaning tools** and for the native operation for the radical cure of entropion, see Chapter XXII, Eye and Ear Diseases.

"The Golden Mirror of Medicine describes briefly certain manual methods for the treatment of fractures of the bones, injury to the sinews, dislocations, etc. These are the *moh* or feeling method, the *chieh* or uniting method, the *twan* or supporting method, the *t'i* or elevating method, the *anmoh* or pressing and rubbing method, and the *t'ui-na* or the method of pushing and taking hold of (so as to place it in position). These various hand methods may fail or require to be supplemented by apparatus. Ten different forms are given by which the broken may be joined, the slanting

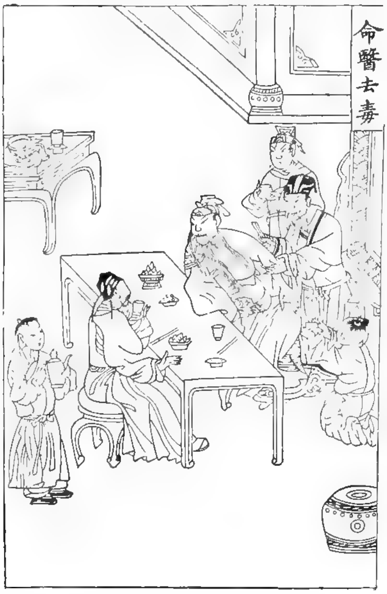

FIG. 11.—Kwan Tai, the Chinese Military Idol, is being operated on for necrosis of the elbow. During the operation he is quietly conversing with a friend. The surgeon is the well-known Wa To, 221-264 after Christ.

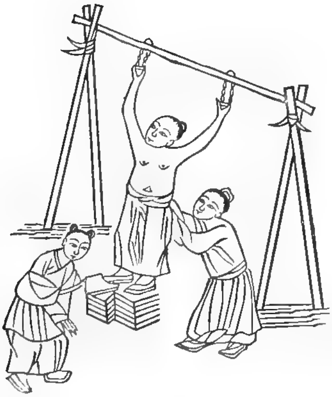

FIG. 12.

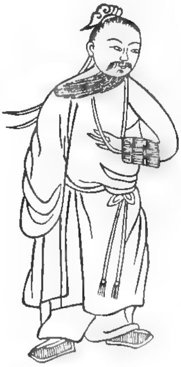

FIG. 13.

FIG. 12. Chinese surgical methods. Suspension from a rope from a high place, the rope to be grasped by the hands.

FIGS. 13 and 14. Chinese surgical methods. The Babboo screen, in size according to the injured part, no matter where. The manual method must first be employed, then the bandages and last of all the screen, and thus correct what is uneven or movable.

made straight, the elevated made even, the depressed raised, the dangerous made benign and peaceful, the severe made light, together with the administration of medicine and a nourishing diet.

"1. The first is termed *kwo-shai* by the use of bandages of white cloth; the length and breadth according to necessity.

"2. The *Chen-ting* or use of splints; length 1 1/2 feet; in roundness the size of a cash or like the baker's roller (mien-chang).

"3. The *P'i-chien* or shoulder cap is prepared of ox-hide; in length 5 inches, breadth 3 inches, with two holes at the two ends, to be tightly bound to the injured part with cotton string; the patient to recline, etc."—*J. Dudgeon*,

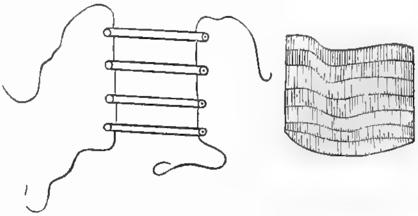

FIG. 14.

Native internal medicine is ahead of their practice of surgery. It may be said of the former that their drugs, while perhaps worthless, are for the most part comparatively harmless, though Duncan Whyte, of Swatow, in a recent letter[1] dissents from the latter opinion, quoting cases of poisoning by overdoses of native drugs.

"*To the Editor of 'The China Medical Journal.'*

"DEAR SIR:—In a recent issue of the *Journal* you took occasion to pass the following criticism on native methods of treatment; referring to the Chinese, you said-'Their own medicines are worthless, but at least comparatively harmless.'

"With both counts of this accusation I totally disagree. Their medicines are neither worthless nor harmless. To deal with this last point first. I have been called out twice, within ten days, to see cases of poisoning due to overdoses of native medicine; one case recovered, the other died, untreated, ten minutes after I entered the house. Such a result should not have followed the ingestion of a 'harmless' medicine. . . .

"Finally, may I give an example of a method used in this neighbourhood to which I have, till recently, had a very strong antipathy, viz., the tying of a piece of red cord round a limb between the seat of an inflammatory process (in a large proportion of cases, a whitlow) and the heart.

"The reason given by the patient—'to keep the swelling from spreading up the limb'—is absurd, but the treatment, *if properly applied*, is undoubtedly beneficial.

"It has been shown by Bier that the passive congestion—so long associated with his name in the treatment of chronic (tuberculous) inflammation—is of great value in acute (septic) inflammation. Over a hundred cases have been thus treated by him with very satisfactory results (see Bier, *Münchener medizin. Wochenschrift*, 52, Nos. 5

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[1] *China Medical Journal*, 1906, p. 273.

6, 7). Cathcart (Edinr. Med. Chir. Society) has also reported several cases that benefited under treatment.

"Is not the red cord that ignorant coolies for generations past have tied round their forearms merely a simple method of applying that passive congestion of which we in the West have only recently discovered the value?

"Yours sincerely,
"G. DUNCAN WHYTE,

"SWATOW, 24th July, 1906."

A physician has said (we do not remember his name), when asked if he was not surprised at the good use made of their pharmacopœia by the natives, that he was "astonished at the poor use they made of it." With regard to the latter, surgery, so little apparent good is done by it and so much in the way of infection and destruction that the balance appears to us to be on the debtor side of the account. A practitioner of scientific medicine must be pretty low down in the scale if he does not do at least more good than harm by his practice. But in the hands of the Chinese surgeon, his tools are powerful weapons of harm and destruction. Yet even here we cannot always say positively that such a gangrene was the result of a native operation and not the result of the original condition. Aneurisms have been known to break down even in our own good care.

Finally, there is *not the slightest antagonism* between the scientific practitioner and the native empirical practitioner. There is no earthly reason why mutual consultation should not take place, from an ethical and theoretical point of view. Practically, an intelligent coöperation could not be arrived at, but the man who refuses to recognise the legitimacy of native practice or treats the native practitioner as a quack and a charlatan is provincial and narrow-minded. The native is entirely unprejudiced and will seek advice and invite consultation freely. For some years our clinics and operations have been frequently visited by a middle-aged native practitioner with interest, if without other than the profit of friendly relationships.

CHAPTER II.

NOSOGEOGRAPHY.

So far as we are aware, there has never up to the present time been made a careful scientific study of the geographic distribution of disease in China. Certain groups of diseases have been approximately located with regard to the map of China, as, for example, in Coltman's paper, read in 1890, in which he gave the results of some correspondence on the subject of the presence and distribution of the infectious fevers of China. This paper was revised and published in his "The Chinese." Dudgeon, in the Customs Reports ("The Diseases of China," by John Dudgeon, M. D., Pekin, 1877[1]) has published a short study, of which the present value is *nil*. And as for Scheube's maps of the distribution of disease, they are altogether unreliable for China. Large and important groups of diseases are not touched upon in any of these studies. Among the Customs Reports we find maps on plague and leprosy which show some careful work, but they are about twenty years old and have undertaken to demonstrate rather more than their available reports warranted.

The need of this study is without question. But the difficulties involved are literally enormous, and it is even now, after several years' work, a question in our minds as to whether anything approaching success is possible at this time. Certainly, what we have to present is on the face of it incomplete, and we would make it very plain that this is so, and that this chapter is, as it were, but a preliminary presentation of a study which the future must bring to completion.

The following are the chief difficulties involved: 1. The territory of China is not at the present time more than **imperfectly covered** by men practising scientific medicine. Certain large tracts in the northwest and southwest are practically untouched and unknown to medical science. Up to very recently, for example, there has been only one practitioner in the entire province of Kweichow; Kiangsi, Shensi, and Kansuh are not much better off.

2. There are not more than ten out of some six hundred centres of medical work which publish from year to year satisfactory pathologic

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[1] On February 2, 1877, John Dudgeon, M. D., of Peking, read before the Medico-Chirurgical Society of Glasgow a paper entitled, "*The Diseases of China: Their Conditions and Prevalence Contrasted with Those of Europe*." This is the first nosological study of China of which we have any record, and has come to our attention at the end of our own study of the subject. It is largely a study of hygienic conditions, with the results of which we are in very little accord. And, indeed, the whole is so out of date that it is not worth the reading at the present day except for its historic interest, as shall be said of our own study after thirty years.

findings. The Tungkun Hospital deserves special mention for its thoroughgoing and satisfactory reports. Still, the hospitals, taken as a whole, and the Boards of Health of Hongkong and Shanghai may be said to afford fairly satisfactory statistics for this study if one has the patience to untangle them.

3. A small minority only of medical men at the present time are making **constant use of their microscopes** and other instruments of pathologic precision. Yet we must admit that the number of those doing so is apparently increasing from year to year.

4. As Hodge, of Hankow, has shown clearly, there are certain classes of disease which rarely, if ever, present themselves for treatment by us, especially in the department of internal medicine, and certain others which only give us very partial evidence of their frequency. Foreign medicine in China has **a reputation for certain work,** and is sought for that work; and more, certain of us naturally tend to select special lines of preferential work and to develop those lines to an extent that falsifies the relative frequency value of whatever statistics we have.

On the other hand and over against these objections, taking them one by one, the distribution of our numbers is such that certainly a large part of China is fairly well covered, and sufficiently so for us to make moderately safe inferences with regard to intervening areas; although we must strictly resist the temptation to represent those inferences in definite form at this time. It will always be easy to add reports as the future will bring them to light.

In the study of our maps for the most part there must be no attempt to generalise, from the fact that many reports appear from the Yangtze Valley, for example, while only one or two appear from Yunnan, and draw the inference of paucity in Yunnan and plenty in the river valley, for the simple reason that there are twenty-five doctors in the valley for every one in Yunnan—therefore, more reports. The value of the maps is therefore largely for their local significance, though more than this may often be read from them.

Then, the reports from our hospitals are as far from satisfactory as possible, and only a few pretend to report other than ward patients in detail. Yet the sum total of evidence given is not inconsiderable. The twenty-four volumes also of our *China Medical Journal* include reports of findings of real value.

Laboratory work is not so universal as it should be, not by a great deal; but there is some careful work being done, and we think in our exaltation of the use of the microscope we are sometimes prone to forget that the clinical diagnosis of some men is worth far more than the microscopic findings and diagnosis of others. And it is hardly an open question that we have among our number some diagnosticians who are as reliable and experienced as in any other body of our size. Considering our vast clinical material, this is a moderate statement of the case.

Some forms of disease never present themselves to us for treatment deliberately, that is true; but there must, by accident, come to our notice nearly every ill that the Chinese human is heir to. How many diseases, for example, develop while in our wards? And how many we find are entirely unknown to the patient, who is complaining of some different trouble! Patients do not come to us for *trichocephalus dispar*, but how often do we find it!

Weighing the two sides of the question in the light of our present resources (and we must do so in order to make clear the value and limitations of this study), we are inclined to think that there is at hand sufficient material for a preliminary study along these lines, such as will prove of value as a test of the subject, if for no intrinsic reason. So far as we are concerned, it is a compilation of material which has come to us largely through the labour and painstaking of others, and we very particularly **inscribe this study,** whatever it may be worth, **to our colleagues in China.**

The chief sources of information from which this study has been drawn are the following:

1. The twenty-four volumes of the *China Medical Journal.*
2. The medical reports of the Imperial Maritime Customs.
3. The reports of the Boards of Health of Shanghai and Hongkong.
4. As the by-product of many years of editorial work, a very considerable correspondence and personal acquaintance with our colleagues in the empire.
5. The thorough review of the standard works on tropical medicine.
6. Hospital reports from all over China.
7. Occasional papers published during the past forty years in professional journalism.
8. Our clinical experience.
9. Items from miscellaneous literature.

Concisely, the questions that we seek to answer are somewhat as follows:

1. The **diseases known to scientific medicine** which have been observed by careful observers to occur in China and in the Chinese?

A. Which have not been observed, and may be, for good reasons, inferred not to be present?

B. Are there diseases which exist among foreigners in China which do not appear, or appear in decidedly differing proportional frequency, among Chinese?

2. What are the **important diseases** in China and what is their real geographic distribution, especially with regard to their endemicity and frequency?

Questions 1 and A we have endeavoured to answer, so far as the evidence will do so, by taking the up-to-date American Navy nosology list as a basis and altering it so as to fit our requirements, and then filling in each morbid condition with such reports as we have from reliable observers in China. We have arbitrarily chosen to consider that not less than **three positive reports** from good observers shall establish the presence of any morbid condition. Wherever possible, we have chosen the reports of men working at long distance from each other. The list is not very far from being complete, as a list of important diseases, and it covers pretty thoroughly such ground as most men not specialists can be hoped to diagnose with accuracy. This list is published at the end of this chapter as a list of reference which may be corrected and extended as time shall develop the subject. There has been a conscientious attempt made to use only reliable reports and to make certain that the condition reported was in a Chinese patient in China, and not an imported case. The side remarks are merely to correct impressions as far as possible with regard to frequency and so forth.

As might be expected in an empire with **a wide range of climate and a third of the population of the world**, the list of findings is remarkably inclusive, and it must be realized that some conditions not reported probably exist in normal amount but have failed to reach the authors in one way or another. Very briefly, the parasitic diseases, both protozoal and metazoal, the general infective diseases, the venereal diseases, the skin diseases, and the tumours are represented almost in their completion. On the other hand, the constitutional disorders of nutrition, diseases of the nervous system, the diseases of the circulatory apparatus, and the gynecological conditions are the least complete in their findings. With regard to affections of the eyes, the Chinese are about the average of Western countries. With very few conditions are we warranted in answering the question, which may be inferred not to be present? But we may perhaps legitimately place the following in such a list, with the proviso that it be understood that any moment may disprove our inference. For what it is worth, we offer it: Tripanosomyasis, schistosomum hæmatobium, schistosomum mansoni, dracunculus medinensis, anthrax (?), sleeping sickness, yellow fever, Addison's disease(?), chorea, glanders (?).

The list is small indeed and stands a chance of being cut down speedily with regard to anthrax, Addison's disease, and glanders, not to speak of the likelihood of yellow fever getting over here after the Panama Canal is opened.

In Question B there are two parts:

a. Are there diseases which exist among foreigners in China which do not appear among the Chinese?

Probably there are none, though there are no entirely satisfactory reports of tropical sprue in Chinese patients. The fact that there are no reports of rötheln should not be taken too seriously. If rubella sinensis is a different entity, still individual cases might easily be confused. Coltman gives no report of it, and we have none. But when it is remembered that scarlet fever is a recent introduction we may take it for granted that it is only a question of time before rötheln will be here also, if it has not already arrived. It has been diagnosed among foreigners, but again the confusion with rubella sinensis must be taken into account.

b. Are there diseases which exist among foreigners in China and appear in decidedly differing proportional frequency among Chinese?

To this we may promptly answer, yes, there are a number of such. Chief among them is *sprue*, which is met with among foreigners in rather appalling frequency, and in Shanghai with particular severity, yet it appears to affect the Chinese practically not at all. Even in Shanghai we have never seen a case that we could conscientiously call sprue in a Chinese. Reifsnyder (Shanghai) "thinks she once saw an undoubted case." We have no doubt that symptomatically it was such, but, unless very typical, sprue would be a difficult condition to diagnose without longer acquaintance with the patient than the average hospital association affords. We have seen tongues that looked like sprue and intestinal conditions which simulated it closely.

Next on the list is certainly *liver abscess*, which is tremendously prevalent among foreign men, especially those who drink heavily, and is decidedly a rarity among Chinese, though found, of course. *Acute articular rheumatism* is seen among foreigners not infrequently, but rarely among Chinese. The same may be said of *locomotor ataxia*. The surgical condition *varicocele* is not seen in the Chinese once for every hundred cases seen in a western hospital. In Shanghai we have never seen it except in its very mildest form. Maxwell operated once in Formosa for the condition which was supposed by the patient to be a hernia. If he had known its true import he probably would not have sought operation. *Appendicitis* is extremely rare among Chinese who do not subsist on foreign food; while in Shanghai it is extremely common among foreigners and frequently seen in Chinese who keep a foreign table.

The following conditions are **rarely or never met with in foreigners in China,** though prevalent among the natives: Kala-azar (never); leprosy (once); elephantiasis (once); beri-beri; plague, very infrequently among foreigners; and the intestinal parasites, except *Ascaris lumbricoides* and *Trichocephalus trichiurus*. But from this latter group we must draw no fast inferences. Foreigners in China do not live under the same conditions as the Chinese, and they are not exposed to these infections; as, for example, beri-beri. They are not crowded, they do not subsist on a rice diet—if these be conditions for beri-beri infection.

2. What are the **important diseases of China,** and what is their **real geographic distribution,** especially with regard to their endemicity? This is the main question and the most difficult to be answered.

It may be taken as a starting-point that, as in our past experience in other lands, the distribution of disease in China will be **largely governed by climatic conditions;** and if we add to this factor that of the influence of lines of travel, and especially of foreign contact with the formerly for centuries undisturbed China, we have named the two points which will have the most influence on any diagrammatic representation of the subject that we may attempt. The parts played by food and manner of life,[1] important though they are, will bear on the whole nosology, not on the nosogeography. Without going deeply into the climatology of China, we may select the well-known conditions and bring them to bear on our study.

> "The largest class of China is the labouring class who barely earn enough to secure food of the coarsest description, containing so little aliment that a large quantity has to be ingested to support life. This results in dilatation of the stomach, thinning of its walls, with consequent impairment of its function."—*Coltman, Tientsin.*

Broadly speaking, China is **according to its climate divided** into North China, Central China, and South China. In the north, say from parallel 35 upward, the climate is dry, stimulating, and, though warm in summer, it is generally sought at that season by those foreigners whom the damp hot south has driven out. The winters are severely cold, and north of Newchwang they are rigorous. This is **Division 1** on the map and has perhaps the finest climate of all China. At the Hoangho, west of Shansi, we have divided this section and labelled it Division 4, because about this there is a total absence of reliable information. We know that the climate is very cold and dry, the food supply excellent; and dust-storms are exceedingly prevalent and trying. We may perhaps legitimately infer a healthy region. Rijnhart, who travelled through these parts between 1895 and 1899 and lived for many months at Lusar among the Lamas, records that among the common ailments they treated diphtheria, rheumatism, dyspepsia, besides many forms of skin and eye disease.[2]

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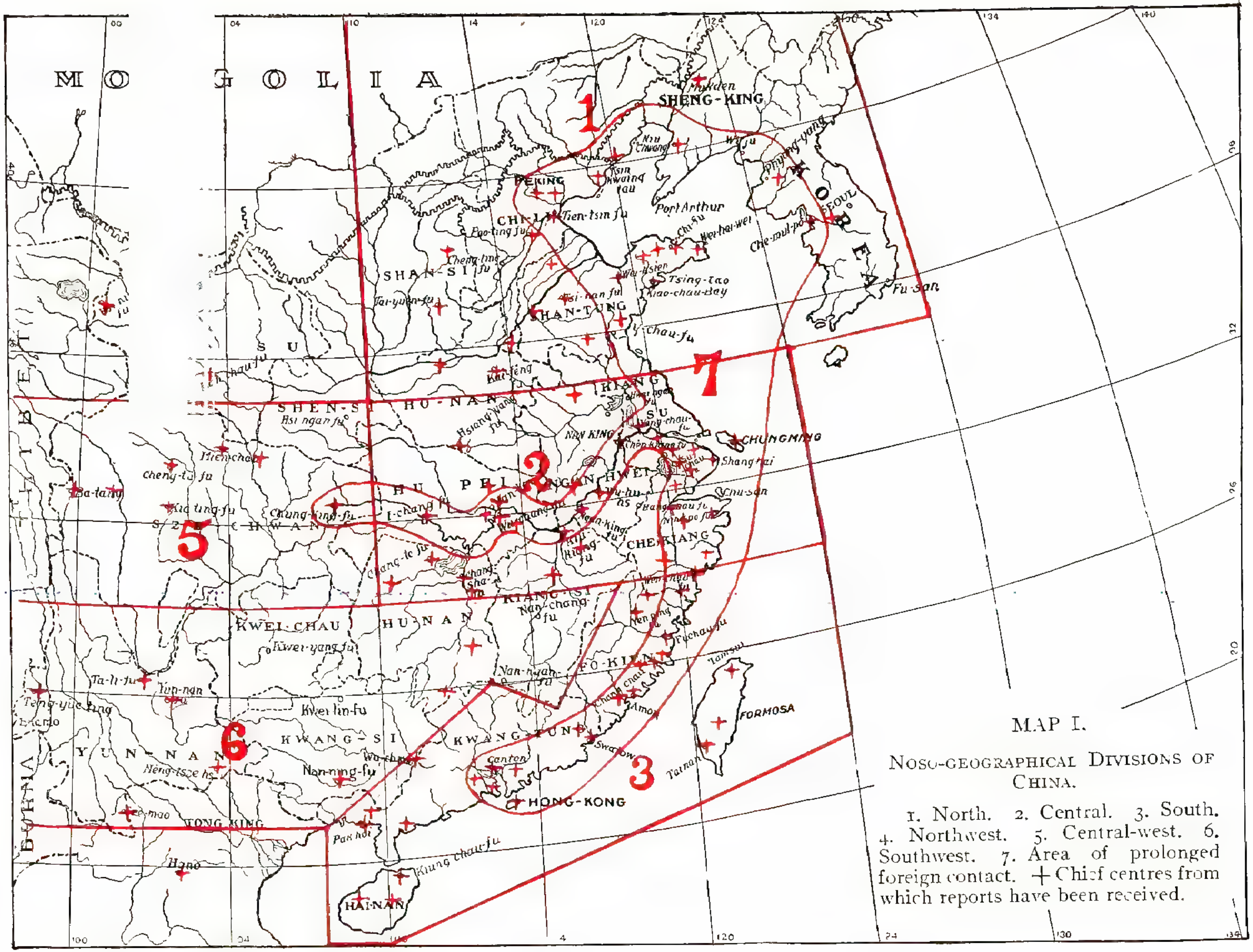
[1] Coltman places first the diseases of alimentation, dyspepsia of various forms taking precedence in all reports.

[2] "With the Tibetans in Tent and Temple," p. 34.



MAP I.

NOSO-GEOGRAPHICAL DIVISIONS OF CHINA.

1. North. 2. Central. 3. South. 4. Northwest. 5. Central-west. 6. Southwest. 7. Area of prolonged foreign contact. + Chief centres from which reports have been received.

Central China, 28–35° latitude, includes the whole Yangtze Valley. It is cold and damp in winter and warm and damp the rest of the year, with occasional and irregular happy stretches of some weeks of delightful weather in early spring or late autumn. The summers are very long, warm, damp, and enervating. This is Division 2 on the map of the nosology of which we know much. Again to the west, and still at 110° longitude, we have marked off Division 5 to include Szechuan province and the upper Yangtze reaches. This is on the whole higher land and dryer. We know somewhat reliable about Division 5, but not a very great deal.

South China is subtropical and tropical, always warm, usually hot and damp. There is no frost or proper winter season here (28° down). Division 3 is drawn to include the coast and the better known east, also Formosa and Hainan. West of Fukien and Kwangtung again so little is known that we have subdivided Division 3 to the west into Division 6. Of all parts of China, Division 3 is that which has the most individuality, the most character of its own, from the standpoint of disease distribution. Finally in Division 7 we have included a composite area—the whole coast line from Newchwang to Hongkong and the lower Yangtze Valley, namely, the area of protracted foreign contact. In all that follows we shall refer to these divisions by number and ask you to refer to the maps for definition.

By way of partial answer to the complex question before us we have prepared a set of eleven maps which will be found in the chapters treating of the diseases to which they refer. **These maps** have been prepared with the utmost care and at great labor, and **their value** must be understood to lie, **first,** in the local information which they impart; **second,** in that they contribute to future more complete findings, and, **third,** in the limited and tentative generalisations which may be drawn from them.

Map 1 divides China, as heretofore explained, into **seven convenient districts,** Nos. 1, 2, 3, and 7 of which much is known, No. 5 of which something, No. 6 of which little, and No. 4 of which practically nothing is known. Very briefly with regard to each section:

Division 1 is healthy, pleasant in summer, though warm; and delightfully invigorating in winter. In its nosology there is nothing tropical whatever. Plague is in Nivchwang occasionally; cholera epidemics reach it from time to time; dysentery is endemic in Shantung province, especially on the north coast. It has almost all the typhus of China within its boundaries. Paragonimus westermani is endemic and plentiful in Korea. Tuberculosis is fairly prevalent, though not nearly so much so as in Division 2.

"In some counties in the interior, especially around Weihsien, serious lung troubles are scarcely heard of."—*Coltman, Tsinan.*

The common tapeworm is supposed to be *tænia saginata*, though we doubt it.

Division 4.—It would be mere pretence to make any very definite statements concerning the nosology of Division 4. We have a few reports from the district, but we are not at present aware that there is a single scientific practitioner in the whole region. Certainly, none that have been there long enough to speak with any authority. Most certainly, none have spoken of it. We have made certain remarks based on climatology earlier in this chapter. Scheube says[1] Matignon reports that "since 1888 plague occurs every year with more or less virulence in the valley of So-li-ko, North China, on the borders of Mongolia. But it is not known how or by what way it was first imported there." There is no confirmation of this report.

Division 2, about which more is known than all the rest of China put together, includes the lower Yangtze Valley. The most characteristic element in its nosology is the tremendous prevalence and fatality of tuberculosis among the Chinese, and particularly in the River Valley. It includes at least two prominent health resorts for this affection, in Kuling and Mokanshan, though advantage of them has chiefly been taken so far by the foreign population. Plague rarely reaches this section, and then by importation. Cholera sweeps over it whenever it is about; there is plenty of dysentery here also. Northern Anhuei is noted for vesical calculus. Shanghai city is the worst centre on earth for tropical sprue (this affects only the foreign population). The types of malaria are all abundantly represented, particularly the subtertian. Northern Chekiang is the centre of endemicity for several interesting fluke worms. Beri-beri is fairly prevalent throughout the district. Among hospital patients R. Smyth (Ningpo) says "malaria, eye and eyelid affections, skin disease, and rheumatism formed as usual the bulk of the cases seen in the dispensary." In Shanghai we might say the same of tubercular bone disease, syphilis, beri-beri, malaria, trachoma, and accidental surgery; piles and fistula, of course. Cousins (Hankow) reports: "Among our more common cases have been anæmia, gastric ulcer, acute gastritis, malaria, pneumonia, acute bronchitis, typhoid, dysentery, some cardiac and renal cases." Around Ichang malaria is all-pervading. The Yangtze Valley and Hunan seem to include the endemic area for *schistosomum japonicum.*

We should note that Tsungming Island at the mouth of the Yangtze is an endemic centre for goitre, according to credible reports.

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[1] Scheube: "Diseases of Warm Countries," p 5

1.—Meteorology of Shanghai. 1908.

		January	February	March	April	May	June	July	August	September	October	November	December	Year 1908
Barometer....	Mean inches	30.334	30.300	30.209	30.038	29.864	29.715	29.631	29.725	29.910	30.072	30.231	30.291	30.0266
	Departure from average	+0.011	+0.017	+0.039	+0.035	−0.007	−0.024	−0.052	−0.004	0.000	−0.034	−0.015	+0.015	−0.004
Temperature .	Mean degre	40.95	38.48	45.25	53.60	66.18	73.72	79.68	79.74	72.84	64.09	51.44	45.48	59.287
	Departure from average	+3.24	−0.63	−0.83	−2.63	+0.63	+0.39	−0.67	−0.48	+0.02	+0.77	+0.45	+3.44	+0.233
Daily range of temperature	Mean degree	12.06	13.32	14.94	14.20	19.76	16.20	13.03	16.31	15.95	14.45	17.77	15.57	15.296
	Departure from average	−1.31	−0.20	−0.07	−2.49	+2.43	+0.94	−1.78	+0.99	+0.34	−2.45	+0.78	−0.50	−0.277
Degree of humidity.	Mean (saturation − 100)	81.2	76.9	76.8	82.6	77.2	845	87.1	83.1	84.7	84.9	78.3	79.1	81.36
	Departure from average	+1.7	−1.9	−2.6	+2.4	−2.7	+0.7	+2.9	−1.3	+1.7	+5.3	+0.8	+3.2	+0.85
Rainfall	Amount in inches.	1.79	1.32	1.93	6.14	2.44	517	7.66	5.10	3.31	5.37	0.95	1.69	42.87
	Departure from average	−0.38	−1.02	+0.49	+4.01	−1.24	−1.31	+2.11	−0.81	−1.31	+2.07	+0.83	+0.52	+2.30

The above figures have been kindly furnished for this report by Father Froc, director of the Siccawei Observatory.

Meteorological Table. (Wuhu.)

Latitude, 31° 20′ 38″ N.; Longitude, 118° 22′ 5″ E.

Months	Thermometer		Rainfall
	Mean Maximum, ° F.	Mean Minimum, ° F.	Inches
1904			
April	66	51	10.93
May	76	62	5.99
June	84	71	2.39
July	89	76	3.51
August	89	75	2.00
September	81	68	3.81
October	72	58	7.24
November	63	45	1.50
December	52	35	0.39
1905			
January	50	37	3.61
February	41	31	1.33
March	52	40	4.97
April	64	49	5.05
May	76	61	5.23
June	87	74	3.34
July	90	79	4.37
August	86	75	6.47
September	82	70	7.64

Wuhu, September 30, 1905. A. Sharp Deane, F. R. C. S.

Certain interesting notes made by Stooke and Graham (Ichang) bring up the following points: Malaria was extremely common, especially in country districts where rice fields are. Up to this time ankylostomiasis had not been noted, but it has since been found. Leprosy is comparatively rare. Locomotor ataxia had never been seen. (We know it, from many hospital reports, to be exceedingly rare in this land.) They also note that they have never seen typhoid in a native—this in 1895. (Evidently typhoid is very uncommon among the Chinese west of Wuchang.) Scarlet fever, whooping-cough, and rheumatic fever have not been seen, though chronic rheumatism, muscular rheumatism, and rheumatic arthritis are common. Gout is exceedingly rare. Neither form of diabetes has been seen. Rickets in children seems very rare. Melanotic sarcoma, common. Appendicitis, behind the times; and no gall-stones. Very little lobar pneumonia. Considerable tricuspid and mitral heart lesions, but no aortic. Syphilis all-pervading. Very little insanity.

Division 5 is perhaps, all told, the second healthiest division of China. Certainly, it is a great improvement on the lower temperate Division 2. It is noticeable that in nearly every report and nearly every map there is moderation expressed concerning prevalence and intensity along all lines. The scourge of the section is apparently tuberculosis. An interesting note is made by McCartney (Chungking):

> "Over 50 per cent. of the operations in the hospital are the result of the ravages of tuberculosis, the greatest foe the Chinese have to contend with, and this will naturally remain so until the crowded and unsanitary conditions of family life are relieved. To begin with, a Chinaman's idea of how to prevent sickness is so opposed to our modern method of treating tuberculosis, it is with difficulty that we can persuade any of them to follow the open-air treatment. They would much rather take gallons of cod-liver oil than expose themselves to the 'fung' (wind)."

Meteorological Table.[1] **(Chungking.)**

1904–1905.

1904	Rainfall	Barometer		Thermometer		River	
	Inches	Max.	Min.	Max.	Min.	Highest	Lowest
October	4.41	29,863	28,998	90°	55°	41.0″	20.8″
November	0.86	30,287	29,335	71°	45°	21 0″	9.2″
December	1.93	30,097	29,351	64°	37°	9.0″	4.8″
1905							
January	0.87	29,897	28,919	68°	35°	4.9″	1.10″
February	0.49	29,959	29,285	61°	35°	2.11″	1.3″
March	1.20	29,991	29,136	68°	43°	6.3″	1.9″
April	1 86	29,764	28,862	90°	51°	11.7″	4.2″
May	3.06	29,777	28,974	98°	56°	21.7″	5.9″
June	5.94	29,472	29,018	95°	68°	45.1″	14.4″
July	1.39	29,306	28,961	105°	70°	45.9″	26.9″
August	7 41	29,328	29,006	102°	70°	108.0″	30.7″
September	10.06	29,718	29,038	98°	64°	70.10″	31.3″

It is likely that ankylostomiasis is also very prevalent throughout Szechuan province, but tuberculosis is absolutely rampant in the Yangtze Valley and ankylostomiasis is very prevalent in Hupeh and Hunan. It is interesting to run over the list. There is no report of plague from Division

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[1] We are indebted to Harbor-master Mr. J. A. Barton for the above.

5 as far as history goes back. Shanghai has had twelve epidemics of cholera since 1862; Chungking has had two; Miencheo, Szechuan, one. Leprosy, no reports give it as prevalent; two give it as very sparse. There are no reports of beri-beri from Szechuan province. There is considerable malaria at Chentu; other points mark it as moderate. We have no report of subtertian malaria from Szechuan province, though undoubtedly it will later prove its presence. None of the fluke worms are reported from Szechuan. Three reports give elephantiasis as rare; one as absent; none as prevalent. No goitre is reported from Szechuan. It has been denied by at least two competent physicians that they had ever seen typhoid in many years' practice. Certainly the evidence is favourable to the healthy conditions prevailing in this **finest of all the provinces of China.**

Of **Division** 3 much is known. It is tropical and subtropical. There is little or no frost, even in northern Fukien. By far the most characteristic point in the nosology of this district is the prevalence and stability of plague. It is found throughout and is endemic practically throughout. Formosa is noted for dysentery, ankylostomiasis, malaria. *Tænia circinata* is found here, *fasciolopsis buski* is pretty nearly confined to this district and will probably be found throughout it. Hongkong is a distributing centre for various infections, owing to its importation of Indian troops, police, and so forth. Many affections are being reported from Hongkong, as, for example, guinea-worm, tropical ulcer, and so on, which do not belong to China, but which may take root. There is malaria all over the district, tertian and subtertian chiefly. In all Kwangtung and the Wuchow district of Kwangsi, but particularly round about Canton city, vesical calculus is exceedingly prevalent. This section also has a centre for goitre in some of the villages of Central Formosa. Two hospitals in this district give the following lists which are interesting by comparison with those given under Division 2. Betow and Draper, of Singiu, Fukien, say that abscesses are numerous, beri-beri seldom met with. Dengue is met with; diphtheria very seldom. Malarial fevers are everywhere; typhoid occasional; plague prevalent; syphilis the most terrible disease one has to deal with. Malignant smallpox is also noted. Fahmy (Chinchew, 1903) notes "during the past year epidemics of plague, cholera, dysentery, measles, smallpox, catarrhal ophthalmia, influenza, dengue, and the remittent fever"—a pretty gruesome season.

Of this district it may be said that plague does not go north of Wenchow, with the exception of Newchwang. Scarlet fever is not prevalent south of the same; and indeed the city of Wenchow marks the transition from tropical to temperate China with regard to disease.

Meteorological Return—1905, Hongkong.

The following table records the meteorological conditions which prevailed during the year:

Month	Barometer at M. S. L.	Temperature			Humidity		Cloudiness	Sunshine	Rain	Wind	
	Ins.	Max. °	Mean. °	Min. °	Rel. P. c.	Abs. Ins.	P. c.	Hours	Ins.	Dir. Points	Vel. Miles p. h.
January	29.93	69.0	64.3	60.7	79	0.49	69	142.9	1.800	E	11.5
February	30.01	58.9	55.3	51.6	84	0.37	92	26.3	1.100	E by S	11.3
March	29.94	61.8	58.9	56.3	88	0.44	96	31.1	11.485	E by N	17.9
April	29.85	72.0	67.8	63.7	85	0.59	86	100.7	1.235	E	15.1
May	29.80	83.0	78.1	74.3	82	0.78	66	212.0	6.825	ESE	10.1
June	29.62	85.0	81.1	77.4	83	0.87	80	144.3	19.695	ESE	11.4
July	29.61	87.8	82.3	78.1	80	0.88	63	243.5	9.015	SSE	7.8
August	29.65	86.7	81.2	77.3	84	0.89	68	223.4	12.115	SE by E	9.3
September	29.77	84.7	80.1	76.5	81	0.83	65	190.5	3.195	E	14.8
October	29.89	80.4	75.9	72.0	71	0.64	49	201.7	1.830	E by N	12.4
November	30.05	73.6	69.2	65.0	66	0.46	48	209.0	0.280	E by N	12.4
December	30.00	69.6	65.3	62.1	80	0.50	73	117.0	2.370	ENE	12.9

Statistical Table of Meteorology for 1907 and 1908.

Pakhoi. Service of the Imperial Customs.

	Average monthly minimum	Average monthly maximum	Average monthly temperature	Average moisture monthly	Total rain for month	Quantity of rainfall in morning	Quantity of rainfall in evening	Maximum temperature of the month	Minimum temperature of the month	Divers observations
					mm.	mm.	mm.			
October, 1907	22.5°	27.8°	25.2°	85.7	4 9.38	421.	72.8	31.7°	17°	The temperatures are based upon the centigrade thermometer. The depth of rains are reckoned in millimeters. The hygrometric tension is calculated from 0 to 100, this latter denoting saturation.
November, 1907	17.5°	24.5°	21.05°	74	17.5	17.5	.. ...	29.6°	9.4°	
December, 1907	12.7°	19.7°	16.1°	86	78.5	63.5	15	29	8°	
January, 1908	14.45°	19.73°	17.09°	81	66.4	45.6	20.8	24.8°	9.3°	
February, 1908	10.82	15.62	13.22	81	46.7	39.4	6.7	25°	6.9°	
March, 1908	14.55°	21.36°	17.05°	70	12.5	10.3	2.2	27°	8.2°	

Pakhoi, April 2, 1908. Dr. R. Ascornet, Medical Officer Customs.

	I.—General Diseases in Chinese.—Hongkong, 1905.	
A.	Specific febrile diseases	1151
B.	Diseases dependent on specific external agents	166
C.	Developmental diseases	958
D.	Miscellaneous diseases	1084
	II.—Local Diseases.	
E.	The nervous system	690
F.	The circulatory system	160
G.	The respiratory system	1585
H.	The digestive system	108
J.	The urinary system	55
L.	The generative system	1
M.	Affections connected with pregnancy	8
N.	Affections connected with parturition	32
O.	Diseases of organs of locomotion	4
	III.—Undefined and Undiagnosed	290
	Total, all causes	6292

Division. 6—Most of the information that we have about Division 6 comes from the Customs Reports which have Mengtze and Tengyueh as their centres, though lately some interesting information comes from Talifu, Yunnanfu, and Nanningfu. The province of Yunnan has, according to authorities quoted by Manson, the distinction of being the ancestral home of bubonic plague, and certainly in the latter part of the last century it was thoroughly cursed with the same. Of Mengtze, Michaud said in 1894 that they had had plague every year for the past thirty-five years. But whereas plague has been fairly lively on the coast during the last five years, it seems to have let up a bit in Yunnan and Kwangsi, several reports noting its absence for from two to five years past. From all we can gather, the impression that we get is to the effect that South Hunan and South Kiangsi mark a rather favourable transition from the Scylla of the Yangtze Valley to the Charybdis of Kwangtung province. In Hunan, on the extreme southern border, there is a marked endemic centre for goitre. West of Kweichow we confess to practical ignorance. Kwangsi and Yunnan are for the most part representative of the nosology of Kwangtung, with a few marked distinctions. There is less vesical calculus in Kwangsi by about half than in Kwangtung, and in Yunnan there is very little at all. Tuberculosis is prevalent in Kwangsi, but Rees, of Wuchow, notes the comparative absence of lupus vulgaris and tuberculous disease of the reproductive organs, both of which are marked on the coast. Rees also speaks of the prevalence of nephritis and attributes it very largely to malarial infection. He states that cer

tainly malaria aggravates any existing renal trouble. (See Chapter V.) The prevalence of portal scirrhosis is manifestly not of alcoholic origin. Goitre is found abundantly at Nanningfu, though it is not so all-pervading as in other centres mentioned.

Meteorological Table (Latitude 25.2° N., Longitude 98.30° E.).

"I am under obligation to Mr. B. Cavanagh, assistant examiner, for kindly supplying me with the meteorological table given below:"

Month	Year	Thermometer		Rainfall, inches
		Maximum aver., ° F.	Minimum aver., ° F.	
May	1908	77	59	4.46
June	1908	75	65	11.52
July	1908	77	65	12.92
August	1908	80	64	8.76
September	1908	80	61	4.87
October	1908	79	52	4.37
November	1908	71	45	9.37
December	1908	73	32	....
January	1909	67	30	1.11
February	1909	70	34	....
March	1909	76	40	0.11

Tengyueh, Customs Health Report, Yunnan, 1908—9.

Division 7.—It was originally taken for granted by the authors that if we could find sufficient reports from districts not much touched by foreign invasion and compare them with that portion of China which has been in close contact with foreigners for nearly a hundred years, we would obtain some very interesting nosogeographic differences. The results only go to show the unwisdom of counting one's medical chickens before they are hatched. Of course Division 7 has more reports to show than all the rest of China put together. There are more scientific practitioners therein and of longer standing. But we must frankly confess that we can trace very little influence upon the nosology of China which can be put down to foreign invasion. It would be more accurate to say, modern contact with the white races (for of course we may take it for granted that Koreans, Japanese, and Malays, Indians and Chinese have been mutually infecting each other in a desultory way for centuries past). The clearest case of indebtedness to foreigners on the part of China is scarlet fever. Undoubtedly both Japan and China owe this contribution to us. In China it is even known the name of the patient who contributed scarlet fever to the empire. But the disease has not at all confined itself to the area upon our map, having spread northward over a large part of the empire. It used to be a favourite contention between visiting ship captains and port health officers that syphilis was a contribution from the world's navies to China. And we have seen the statement in print that this, that, or the other inland port showed undesirable after-effects of naval visitations. We wish to make it plain that our opinion on the very best of evidence is that the thing works entirely the other way. China gives more syphilis than she gets. Yunnan and Honan abound in syphilis, and no navy has ever visited those inland provinces.[1]

The climate of China has contributed several diseases to foreigners, and especially sprue. But the Chinese themselves scarcely suffer from this disease. If the Chinese take to alcohol and cigarettes in foreign form, the future will tell a different story. As far as opium goes, we believe it to be responsible for the intercurrence of disease, and perhaps for somewhat of insanity, though China is peculiarly free from insanity; and we have never felt convinced that China, except on paper, owes the commencement of the opium habit to Great Britain. It is certainly worth noting that since foreigners have brought large shipping interests, railways, factories, tramcars, and the like to China the proportion of accidental surgery has risen by leaps and bounds in the affected regions.

Division 7, then, is, on the whole, a rather barren proposition. But after all, does not this very barrenness warrant us in pointing it out and giving it a place?

Tuberculosis.—The term "white plague" is misleading. Even in America do we not know how fatal tuberculosis is among the coloured people—more so than among their white neighbours? Tuberculosis is without any shadow of doubt more prevalent and more fatal among the Chinese than it is in Europe and America. It is the great human plague, and no race or colour has any claim to exclusiveness in predisposition thereto. There is not a single section on the map of China that does not report tuberculosis as prevalent in the most emphatic and strenuous terms, showing a thorough and general impression made upon the medical mind of the tremendous prevalence and fatality of the disease. It is difficult to select from these manifold reports any division most cursed among all.

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[1] Speaking for the American navy, sailors suffering from active venereal disease and in condition even remotely liable to infect others are certainly not allowed shore leave, and it is hardly ever possible for them to avoid detection by the ship's surgeon. We understand that the excellent regulations originally planned and put in force on the U. S. S. Concord are now practically in vogue throughout the service. The German navy claims to be equally strict in China and undoubtedly the rules in the British navy are adequate. This slight defence of the navy codes (not of the sailors' morals) is pertinent in view of misrepresentations which have arisen from time to time.

If we must choose, we should say Division 2. But that is perhaps merely because we live therein. Certainly, Divisions 5 and 6 and 1 have grounds for their pretensions.

"The number of deaths among the Chinese from respiratory diseases was 1,394, or 23.7 per cent. of the total Chinese deaths. This represents a death-rate from these diseases of 4.07 per 1,000 as compared with 4.37 per 1,000 in 1903, and 5.4 per 1,000 in 1902. The discrepancy between the land population and the boat population is not so marked as usual, the death-rate from these diseases among the former having been 4.02 per 1,000 and among the latter it was 4.36 per 1,000. In former years there has frequently been a considerably heavier death-rate from chest diseases among the boat population than among the land population. The number of deaths of Chinese from **phthisis** was 524, or 37.6 per cent. of the total deaths from respiratory diseases."—*Hongkong Health Report*, 1904.

Respiratory Diseases. "The total number of deaths from these diseases for the year was 1,655, of which 70 were from the non-Chinese community, leaving 1,585 among the Chinese population.

"Phthisis alone accounts for 725 deaths, of which 691 were Chinese. Pneumonia caused 501 deaths, of which 478 were Chinese, and bronchitis caused 346 deaths, 336 of which were Chinese.

"The death-rate among the Chinese from respiratory diseases was 4.4 per 1,000 and that for phthisis alone was 1.9 per 1,000.

"The deaths from Phthisis amongst the Chinese were 10.9 per cent. of the total deaths amongst the community."—*Hongkong Health Report*, 1905.

"*Tuberculosis.*—Only one case of this disease was met with in the abattoirs and that was in a European cow. The disease was so widespread as to entail the destruction of the entire carcass. The immunity which Chinese cattle show to this disease may be due to their entirely open-air life." -*Hongkong*, 1905.

"*Tuberculosis.*—There were no cases seen in Chinese cattle. Only one case was met with in a European cow at the slaughter house, and the chief interest in this case lies in the fact that, apart from the commoner lesions seen in the viscera, the meninges of the brain round the base, under part of the cerebellum, and medulla were sprinkled over with small tubercular nodules about the size of a mustard seed. The animal had shown brain symptoms before slaughter, but was otherwise in good condition."—*Hongkong Colonial Vet. Surg.*, 1905.

The forms of tuberculosis among the Chinese perhaps give preponderance to bone disease[1] and less prominence to general miliary disease. But this may simply be owing to paucity of postmortem examinations.

Syphilis is met with from one end of China to the other, though mild in type, as would be expected in any country which must have developed a natural immunity. It is widespread and permeating.

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[1] See Chap. II., p. 37 Chunking Report.

Dysentery.—If dysentery has any geographic location it is on the seacoast, and usually of summer or autumn origin, though relapses may come at any time.

> "September is preëminently the month for dysentery through the Shantung province. Some cases make their appearance after the middle of August."—*Coltman, Tsinan.*

Certain ports have had a bad name for dysentery for many years back. In the port of Chefoo on the north coast of Shantung, the vile hygienic conditions which exist there, especially with regard to the water supply, are such as to excite very little sympathy for those who persist in doing nothing serious to remedy the matter.[1] It may be said of Chefoo that the climate is splendid, but its hygiene as bad as possible; and that if ever cholera or dysentery are found anywhere else, they are also found at Chefoo. Weihaiwei, not four hours along the coast, is by comparison a health resort. There is considerable dysentery in the Yangtze Valley and an enormous amount in the southern coast provinces. It is chiefly amœbic in Shanghai, but not so in Formosa.

> "Dysentery is still very prevalent among the Chinese, but undoubtedly it affects them far less severely than it does the Europeans, in whom the disease often runs a very protracted course, often necessitating change of air and climate."—*Customs Health Report, Wuhu,* 1905.

Plague (Map 2.)—At the present time plague is found only in Divisions 3, and 6, and at the port of Nivchwang. There is very little at Newchwang, and it is hoped that it is dying out there, though every year some is reported. There was an epidemic of rat plague in Shanghai in 1909, but no single case of human plague. Hongkong is badly infected, and the prospects, after repeated energetic efforts to stamp it out, are not encouraging. Our reports are only from the principal cities, but the inland villages and smaller towns of Fukien and Kwangtung are very badly treated by the disease from time to time. There is very little plague at the present time in Yunnan and Kwangsi. Possibly it is dying out, though we fear this hope is over-sanguine. Formosa and Hainan both have it endemically. Maybe Hongkong and the Amoy district are worst off of all. Hankow reports a few cases of plague, autumn of 1909, sporadic and imported.

Cholera (Map 3).—Periodically cholera sweeps over China. The last great epidemic was in 1902, though 1908 was a bad year. The map (No. 3) is accurate as far as it goes, but undoubtedly these epidemics are farther-reaching than is indicated. That is, they really sweep pretty much all over the country from Hainan northward to the Great Wall and beyond. The big cities, owing to their congestion, are most severely affected, but the country districts by no means escape. There is no established free spot as far as we are aware. It travels rapidly and dies out with the approach of cold weather. Shanghai has a noble record of epidemics, but probably merely because its Board of Health has kept careful notes of the same.

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[1] A recent report gives hope of a reformation at the hands of an international municipal committee.

Sprue.—It is really an unsettled question as to whether tropical sprue actually is found in Chinese patients, and one which will take considerable proving before it can be established. We note the following opinions which will show chiefly the total lack of agreement on the subject:

. . . "Never in a native; one case in a foreigner in Peking." —*Ingram, Tungchow.*

. . . "Frequent in Europeans, less so, but well-marked, in a few Chinese." —*J. P. Maxwell, Yungchun.*

. . . "One case in a foreigner."—*Weir, Chemulpo, Korea.*

. . . "One case in a foreign lady."—*Plummer, Wenchow.*

. . . "Uncommon among Chinese."—*Lalcacca, Shanghai.*

. . . "Seldom met with among Chinese."—*Main, Hangchow.*

. . . "Have been told that it is seen in Hoihow."—*Byran, Nodoa, Hainan.*

. . . "I have never seen a case."—*Logan, Changteh.*

. . . "Very occasional, say one or two a year."—*Fowler, Hiaokan.*

. . . "Never see a case here."—*J. L. Maxwell, Tainan, Formosa.*

. . . "A few well-marked cases among foreigners. Have not treated any cases amongst Chinese."—*Squibbs, Miencheo.*

. . . "Never diagnosed any among Chinese."—*Cousland, Chaochowfu.*

. . . "A few; one in 150 foreign patients."—*Hart, Wuhu.*

. . . "Rare and uncertain."—*Johnson, Ichowfu.*

. . . "None amongst Chinese."—*Worley, Swatow.*

. . . "One case from Bangkok."—*McKean, Chiengmai, Laos.*

. . . "Rare."—*Canright, Chentu.*

. . . "One case in a Chinese in twenty-five years."—*Reifsnyder, Shanghai.*

. . . "Never sure of a case in a Chinese."—*Boone, Shanghai.*

These latter two opinions are particularly valuable, as Shanghai is the most cursed point with sprue in the whole East, and the speakers are particularly competent to express their opinion from long service and large clinical experience.

Leprosy (Map 4) is smeared over the face of China as butter on bread—not in spots, but found just about everywhere. In a map published by the Imperial Maritime Customs in 1903 it is indicated that of the Kweichow-Hunan region nothing was known, and of the district north of Hupeh-Szechuan also nothing is known. Szechuan is rightly indicated as having less leprosy than any other known district. Korea, the Yangtze Valley, and the entire seacoast are placed as second in prevalence and about evenly shaded, except that Fukien and South Formosa are given a still higher degree, and North Formosa and Yunnan the highest degree, of prevalence. The map (No. 4) which we exhibit agrees that we know nothing about northwest China, but gives a few reports from Hunan. It also agrees in the comparative rarity of leprosy in Szechuan province and in the comparatively even distribution of the disease over Korea and the coast. We are quite certain, however, that the older map grossly exaggerates the prevalence of the disease in Yunnan and Formosa, as compared with the coast provinces. Perhaps Shantung and Kwangtung have more leprosy than any other provinces. Our map is based on about double the number of reports as compared with those given in the customs map. We think that between the two we have some fairly accurate information on the subject. A number of practitioners have endeavoured to estimate the number of lepers in certain districts. For what it is worth we mention a few: Tainan, South Formosa, one in 450 of population (Maxwell). Ten thousand lepers in the providence of Kwangtung (Wong). Barbeyieux estimates 1 per cent. for Yunnan, but all other reporters are moderate as compared with this probable overestimate. Shantung, one per thousand (Dudgeon). Chungking, Szechuan, a few cases are mentioned (McCartney), and so on.

Beri-beri (Map 5).—Except for men of at least moderate experience, beri-beri is not very quickly recognised, being apt to be confused with multiple neuritis and so forth. We notice, therefore, a natural hesitation on the part of a large number of younger practitioners to report the disease definitely. Such reports as we have all come from the seacoast and the Yangtze Valley. We have really no evidence for saying whether the intervening districts exhibit it or not. Apparently Szechuan is almost free from it.

> "There were 678 deaths from this disease during the year, of which two only were among the non-Chinese community."—*Hongkong*, 1905.

Malaria (Map 6).—As in the case of leprosy, our map of malaria is misleading. Malaria is pretty much all over China—probably Shansi and, it may be, Division 4 are comparatively free. The Shantung promontory has very little, but there is reason to think that every other part included in China is abundantly supplied. The map is also misleading with regard to the prevalence of subtertian malaria. This is certainly more widespread than it has been reported to us. It is perhaps the commonest type of malaria, taking China as a whole, and certainly the most fatal. Though endemic in the Yangtze Valley and many other parts, it occasionally shows marked epidemicity, as, for example, in 1903 Drs. Stooke and Graham (Ichang) report "malaria extremely common, benign forms by far the commonest, but just lately a man with malignant malaria, blood full of crescents," and so on. Yet in the summer of 1906 there was a frightfully fatal and widespread epidemic of subtertian malaria all over Hupeh and Hunan, owing, it is believed, to a famine in Honan the previous winter which drove southward a hundred thousand or more starving Honanese, whose depressed vitality it is supposed afforded the fertile soil necessary to light up the epidemic. At least this is the theory held by those who report from these provinces.

In Shanghai a very careful study of **fifty cases** of malarial fever (1907–8) reported by E. S. Tyau gives the following **proportion:** Subtertian, 8; tertian, 20; quartan, 17; tertian and subtertian, 1; double tertian, 2; double quartan, 2: total, 50.

The prevalence of quartan fever, as shown by this report and by Dr. Park's (Soochow) wonderful clinical report of the year 1887, should be noted as existing in the southeast portion of Kiangsu province. There are few districts, perhaps in the world, where quartan fever is found in such high proportion.

Blackwater fever has been reported twice in China, with reservations: Once from Hainan and once from Fukien. Its presence is very doubtful indeed.

It may be taken for granted, generally speaking, that wherever rice is grown (paddy fields) and wherever there is low farming land traversed by many slowly moving creeks, mosquitoes will abound and malaria be very prevalent. If the mentality of the world would devote itself to devising the most admirable breeding-ground for mosquitoes it could not beat the Chinese paddy field. The conditions are ideal. F. F. Tucker (Pangchuan, Shantung) gives a diagram showing that there are over three hundred villages within an eight-mile radius of that city. This is probably an average estimate for a large part of China.[1] In the rice-growing districts imagine three hundred villages in such an eight-mile radius, and all the intervening ground devoted to the cultivation of mosquitoes. Could anything be more ideal for the health and welfare of the *plasmodium malariæ?*

The chief rice-growing provinces of China are included in Divisions 2, 3, and the eastern part of 6. It would probably not fall far short of the mark to infer that these are the chief malarial districts of China.

Kala-azar.—For reports on its distribution, see Chapter V. In locating Kala-azar the best clinical diagnosis is not to be accepted: the microscope alone must decide.

Relapsing Fever.—We have but few reliable reports of the finding of relapsing fever. When it comes it is almost invariably in epidemic form. The Yangtze Valley has so many reliable medical men that the fact that no reports have come therefrom would almost incline one to believe it absent; but we are sceptical by nature. It will probably be found eventually in all the seacoast provinces, and much more. See Chapter V.

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[1] See Arthur Smith's *Village Life in China*

Paragonimus Westermani.—The distribution of this fluke is an old story and nothing recent has transpired. It is prevalent over most of Korea, where it is certainly endemic, and it is prevalent also in Central Formosa, and found in the north of Formosa; and it has been reported three times from Fukien—Foochow, Amoy, and Changpoo. In each of the Fukien reports there was but one patient, and certainly two, probably all three, were imported cases from Formosa.

For laboratory and nosogeographic purposes it may be looked for in pigs and cats.

Elephantiasis—Filariasis (Map 7).—Manson's theory of the etiology of elephantiasis is persistently doubted by certain free-lances in China. Even if it be true, it needs a great deal more explaining. We had hoped that a reliable map of the distribution of the two conditions would throw some light on the subject. If Manson's theory holds, then where filariasis is common, elephantiasis should be abundant. The result is disappointing, for the simple reason that every man who sees an elephant leg does not take the time to look for filaria in the wee night hours. In other words, it is easy enough to see elephantiasis, but not so easy to see the little blood worms. If filariasis gave symptoms, filaria would be hunted for for diagnostic purposes; but it does not, and the busy practitioner who does not happen to be keen on the matter will not hunt for a benign parasite. We might draw the following inferences from our map, the legitimacy of which is based partly, we confess, on the knowledge of the personal source of the reports. Not that they are not every one reliable, but we know, for example, that the reports from Tainan, from Shanghai, from Yungchun, Hankow, and so forth are based on minute and repeated searches.

Inference 1.—In every case where there is filariasis there is elephantiasis reported.

Inference 2.—Quite frequently the numerical relationship is proportional. That is, where there is much of the one there is much of the other. That is all. Where elephantiasis is reported and filariasis not reported, no inference as to absence or presence of filariasis should be made.

Schistosomum japonicum (Map 8).—Schistosomum japonicum is endemic in the north. If is found in most of Hunan, it is reported from Hongkong, and has been doubtfully reported from northern Kwangtung, near the Hunan border. We have, as it were, two sides of a square. In spite of the fact that there are some of our keenest parasite hunters further up the river in Fukien, in Formosa, and so on, they have failed to find the fluke as yet. It is too early to say anything more definite. By far the most prolific point yet observed is the village of Bingwu near Kashing in Chekiang province. This centre was discovered by Venable and his his able assistant Sia.

Ankylostomum duodenale—*Nectator Americanus* (Map 9).—Three years ago the Research Committee of the China Medical Missionary Association arranged a programme of fæcal investigation, and the serious hunt for ankylostomiasis only dates since that time, but nearly everyone who has looked has found it. Formosa and Fukien have it in abundance; in Shanghai the infection in human beings is found fairly frequently, but not as yet severely, five to twenty worms being the average. The dogs of Shanghai are thoroughly infested with a species closely resembling *A. duodenale*, but larger,and this may possibly explain the poor condition of the native canine strain. They are a forlorn lot of mongrels.

Necator americanus has been definitely and reliably established by Duncan Whyte (Swatow) and O. T. Logan (Changteh).

Fasciolopsis buski—*Fasciolopsis rathonisi*, *Fasciolopsis goddardi.*—The endemic areas of this parasite are, as far as our present knowledge goes, strictly limited. The area of greatest infection appears to be around the city of Shao-shing in the north of the Chekiang province, but it is also reported from the neighbouring city of Shanghai in Kiang-su province. Other places from which the parasite has been reported are Swatow in Kwantung province and Hongkong. We have just received a further report of a case from Yi-yang, in Hunan province. One undoubted case in Shanghai (Jan., 1910). As the interest in this parasite has only developed during the last two years, we have little doubt that this *Fasciolopsis* has really a far wider distribution than is suggested here.

Into the question of the number of species included under this name we shall enter in the chapter devoted to the metazoal parasites.

Clonorchis sinensis.—In dealing with *Clonorchis sinensis* we are again upon the subject of a parasite into whose distribution enquiries have only but recently been instituted, and the area of whose infection is probably far larger than we can at present describe. From the latest reports to hand we are enabled to state that along the south coast of China in the province of Kwangtung from Hongkong to Swatow the infection is a very high one, round Swatow as many as 17 per cent. of the population being affected.

Following the disease north, Formosa seems to escape completely, and no cases are reported from Fukien province. The infection reappears at Shanghai and is abundant in Korea.

The worm is again reported as present in the Yangtze Valley, that paradise for intestinal parasites, from the provinces of Anhwei and Hupeh, and is doubtless present in the province of Hunan. Beyond this we cannot say at present, but, as we have remarked before, the area of infection is almost certainly much larger than that indicated here.

Goitre (Map 10).—Goitre has not been frequently reported in China, but at least four of the reports we have note its tremendous prevalence in certain localities. It is probably found sporadically in small quantities widely distributed, and in **endemic areas**. The island of Tsungming at the mouth of the Yangtze River is a low mud flat formed by the deposits of the river. In flood times it is often temporarily covered over. We do not think that any scientific practitioner has ever located on the island, but goitre patients come occasionally from Tsungming to Shanghai to the hospitals and report that nearly everyone in their village has the same disease. Whether this is true of the island as a whole or merely of one or more villages, we do not definitely know. It seems strange to have so little information about a large district in the immediate neighbourhood of Shanghai city, but one has only to see the place from afar to realise the reason for its isolation.

The second endemic area is a town of which the reporter does not state the name, but which lies, as indicated, near the southern border of Hunan. S. C. Lewis states that on an itinerating trip he passed through a village of which every member seemed to have goitre. H. Lechmere Clift (Nanningfu) reports that the clinics are well attended by goitre patients, but no special endemicity is mentioned.

Finally, the center of Formosa, in the mountains back of Tainan, is prolific in goitre cases which report themselves frequently to Maxwell in Tainan, and he judges that certain villages must be full of it. Some interesting data by way of etiology should develop from a study of these centres.

"Goitre in the neighborhood of Tsingchowfu is remarkably common."—*Coltman, Tsinan.*

"Goitre is very frequent in the north, among both sexes."—*Dudgeon, Peking.*

Vesical Calculus (Map 11.)—Vesical calculus is found pretty much all over China, and nearly every centre will yield from one to ten cases a year for the average hospital. There are, however, a few towns, such as Wenchow, Yenping, Chentu, where physicians have been established for a number of years and still report no stone. And this, considering the ease of diagnosis and the painful nature of the affection, should be considered strong presumptive evidence of its rarity in those centres. China boasts, however, at least two of the greatest stone-producing districts in the world—Kwangtung province (especially in the general neighbourhood of Canton) discovered by J. G. Kerr; and northern Anhuei, city of Hwaiyuen and neighbourhood, discovered by Samuel Cochran. This district seems to extend northward toward Ichowfu, Shantung. This, however, is perhaps inferring too much from the premises. It is stated definitely that though eastern Kwangsi has much stone, there is not nearly so much as in Kwangtung. The inference from this is that the stone area in Kwangtung is extensive and laps over the border of Kwangsi, just as we infer that the Hwaiyuen area is extensive, including Ichowfu. Ningpo seems to originate a good many stones, though it is not reported as a prevalent condition by those working there, merely as found more or less frequently. In Shanghai we get perhaps a dozen cases a year, mostly in Cantonese, occasionally from Ningpo and North Anhuei, but rarely in a native-born Shanghai patient. Stone is apparently infrequent in Szechuan province. For the differentiation, see Chapter XIX.

We need not be surprised to find the nosology of China a fairly normal proposition. There have been a few artificial conditions to modify it. The race, though homogeneous, is widely distributed as to climatology and other natural conditions, and in numbers sufficient to develop pretty nearly every morbid condition known to man. For the indifferent results of our study we need hardly apologise; the difficulties must be readily appreciated. But we believe the future holds out along these lines some tremendously interesting fields for observation and the basis of studies which will prove themselves of inestimable value to the human race.

The greatest diffidence is felt by the authors of this first step in a great journey.

NOSOLOGIC REPORTS.

1, 2 = One or two reports. ◆ – Three reports. ★ – No report.

CLASS I.		
Parasitic Infections (Animal).		
Amœbiasis	◆	Common.
Trypanosomiasis	★	Rat, common.
Trematoda.		
Fasciolidæ:		
Fasciola hepatica	★	Cattle.
Fasciolopsis buski	◆	
Dicrocœlum lanceatum	★	Cattle in Hongkong.
Paragonimus westermani	◆	
Opisthorchis felineus	1	Doubtful.
Clonorchis sinensis	◆	Plentiful.
Heterophyes heterophyes	★	

Paramphistomidæ	★	Found in cattle.
Schistosomidæ:		
S. hæmatobium	★	
S. mansoni	★	
S. japonicum	◆	
Cestoda.		
Dibothriocephalidæ:		
Dibothriocephalus latus	1	And in dogs.
Sparganum mansoni	1	And in pigs.
Sparganum prolifer	★	
Tæniidæ:		
Dipylidium caninum	★	Abundant in animals.
Hymenolepis nana	1	
Hymenolepis diminuta	★	In animals
Tænia solium	◆	
Tænia saginata	◆	
Davainea madagascariensis	★	
Tænia echinococcus polymorphus	◆	
Cysticercus cellulosæ	★	In pigs.
Nematoda.		
Angiostomidæ:		
Strongyloides stercoralis	◆	
Filariidæ:		
Represented only by Filaria bancrofti.	◆	
and Filaria immitis	★	In dogs.
Trichotrachelidæ:		
Trichocephalus trichiurus	◆	
Trichinella spiralis	★	Pigs (Manson). Hongkong Health Board found none in 1904 and 1905. 790 exams.
Strongylidæ:		
Eustrongylus gigas	★	In pigs.
Trichostrongylus instabilis	★	
Ankylostomum duodenale	◆	
Necator americanus	◆	
Ascaridæ:		
Ascaris lumbricoides	◆	
Ascaris canis	★	In animals.
Oxyuris vermicularis	◆	
Acanthocephala:		
Gigantorhynchus gigas	★	
Hirudinea:		
Hirudo medicinalis	★	No report.
Limnatis nilotica	★	No report.
Hæmadipsa ceylonica	★	No report.

CLASS II.

General Infective Diseases.

(Non-venereal.)

Actinomycosis	◆	Ichang, Stooke and Graham. Hongkong: 1 in Chinese buffalo, 1904.
Anthrax	1	Hongkong: 4 in cattle, 1905.
Beriberia	◆	Common: wet and dry.
Catarrhus epidemicus	◆	Markedly epidemic.
Cholera Asiatica	◆	Endemic, with frequent widespread epidemics.
Denguis	◆	Epidemic.
Diphtheria	◆	Endemic and severe epidemics.
Dysenteria amœbica	◆	Common.
Dysenteria infectiva (*bacillary*)	◆	Less common.
Dysenteria (*undefined*)	◆	
Enteritis flagellata	◆	
Enteritis infectiva	◆	Common.
Equinia		
Erysipelas	◆	Common in and out of hospital.
Febris cerebrospinalis	◆	Epidemic, 1908: S. Shantung, N. Kiangsu.
Febris flava	★	Never in China up to date.
Febris melitensis	◆	Common under local names.
Febris pneumonica	◆	
Febris recurrens	◆	Common, epidemic.
Febris rheumatica	◆	Comparatively uncommon on coast.
Febris typhoides	◆	Common: type mild.
Frambœsia	◆	In the south.
Gangræna acuta infectiva	1	Shanghai: three cases (bac. aerog. caps.).
Icterus gravis (*Weil's disease*)	◆	Common about Peking and north.
Lepra arabum	◆	Widespread and common.
Malaria:		
a. Cachexia malarialis	◆	
b. Febris æstivo-autumnalis	◆	Exceedingly common, endemic, and epidemic.
c. Febris hæmoglobinurica		Hoihow: McCandliss reports case, foreign female.
d. Febris quartana	◆	Often seen, especially about Soochow.
e, Febris tertiana	◆	Excessively common all over.
Morbilli	◆	
Morbus lethargicus	★	Never in China.
Mycetoma	★	
Mycosis fungoides	1	Anderson, Taichow.

Paralysis ascendens acuta (Landry's)	◆	
Parotiditis epidemica	◆	Common.
Pertussis	◆	Common and epidemic.
Pestis	◆	Endemic in south, also epidemic.
Phagedæna (hospital gangrene)	I	Shanghai.
Pyæmia	◆	Type comparatively mild.
Pyrexia ortus incerti	◆	Only too common.
Rabies	◆	Fairly common.
Rheumatismus articularis chronicus	. .	Various specific varieties.
Rhinoscleroma	I	Johnson, Ichowfu: two cases.
Rubella	★	
Scarlatina	◆	Epidemic.
Septicæmia	◆	Common and fatal (puerperal).
Stomatitis epizootica	◆	
Tetanus	◆	Common: 339 Hongkong, 1905.
Tuberculosis miliaris acuta	◆	Fairly common.
Tuberculosis pneumonica	◆	Common and severest type.
Tuberculosis *of other parts*	◆	General and local.
Typhus exanthematicus	◆	In north especially.
Vaccinia	◆	By vaccination only.
Varicella	◆	Fairly common.
Variola	◆	Endemic and universal.

CLASS III.

Constitutional Disorders of Nutrition.

Subsidiary Class 1.

General Diseases of Nutrition.

Diabetes insipidus	I	
Diabetes mellitus	◆	Park (2), Myers, Jefferys.
Hæmophilia	◆	Mild manifestations.
Lithæmia (gout)	◆	Decidedly rare.
Lithiasis	◆	Very common in certain centres.
Obesitas	◆	
Pseudoleucocythæmia	I	
Purpura	◆	
Rachitis	◆	Comparatively rare and invariably mild.
Scorbutus	◆	Rare, except in famine times.

Subsidiary Class 2.

Diseases of the Blood.

Anæmia chronica splenica	◆	One case by microscope.
Anæmia perniciosa	◆	
Anæmia simplex	◆	
Chlorosis	◆	
Leucocythæmia	◆	Acute lymphatic, J. P. Maxwell.

SUBSIDIARY CLASS 3.

Diseases of the Ductless Glands.

Bronchocele (goitre)	◆	Common in certain centres.
Cretinismus	2	
Morbus Addison	★	
Myxœdema	◆	Fairly common.

CLASS IV.

Diseases of the Nervous System.

Abscessus cerebralis	◆	Three reports.
Apoplexia	◆	Fairly common—30, Hongkong, 1905.
Aphasia	◆	
Arachnitis	1	Hodge, traumatic.
Atrophia muscularis progressiva	◆	J. P. Maxwell, E. F. Willis, Anne Fearn.
Atrophia muscularis spinalis		Neuritic.
Cephalalgia	◆	Common.
Chorea	★	
Dementia	◆	Hongkong health reports, etc.
Encephalitis		
Epilepsia	◆	Major and minor—Park, 16.
Febris thermica	◆	
Hemicrania	◆	
Hemiplegia	◆	
Hydrocephalus	◆	Jefferys—Hongkong health reports, 1905.
Hysteria	◆	Common—men and women, Park (2).
Idiocy	◆	Olpp, Jefferys, Hongkong reports.
Insanitas (delusional)	◆	Olpp, Jefferys, Maxwell.
Insomnia	◆	
Leptomeningitis	1	Park, Soochow.
Mania	■	
Melancholia	◆	Very common and suicidal.
Meningitis	◆	Tubercular, common—238 cases, Hongkong, 1905.
Migraine	1	Park, Soochow.
Monoplegia	1	
Morbus Reynaud	2	
Myelitis	◆	Olpp, 2 cases.
Nausea marina	◆	Women very subject, men good sailors.
Neuralgia	◆	
Neuralgia trifacialis	◆	Wheeler, Cochran, Jefferys.
Neurasthenia	◆	
Neuritis	◆	Common.

Neuroma	◆	
Neuritis multiplex	◈	In beri-beri and leprosy chiefly.
Nostalgia	◈	Marked.
Œdema angeiospasticum	. .	In a Japanese –Jefferys.
Paralysis agitans	2	Park.
Paralysis facialis	◆	
Paralysis glosso-labio-laryngealis	★	
Paralysis insanorum generalis	1	Jefferys.
Paranoia	.	
Paraplegia	◈	Traumatic common.
Poliomyelitis anterior acuta	◈	Lincoln, Olpp, Park.
Prostratio thermica	◈	Common, especially among foreigners.
Sciatica	◈	Olpp, 13 cases.
Sclerosis spinalis lateralis amyotrophica	.	
Sclerosis spinalis lateralis spastica	1	Fearn.
Sclerosis spinalis multiplex	2	E. McK. Young.
Sclerosis spinalis posterior	◆	
Surditas	◈	Common.
Syringomyelia	.	
Torticollis spasmodica	2	Jefferys true.
Vertigo	1	

CLASS V.

Diseases of the Visual Apparatus.

Achromatopsia	.	
Amaurosis	2	
Amblyopia		
Asthenopia	. .	
Astigmatismus	◆	
Blepharitis	◆	
Cataracta	◆	Not particularly abundant.
Chalazion	◆	
Choroiditis	1	
Conjunctivitis	◆	
Corneæ ulcus	◈	Fairly common.
Dacryocystitis	◆	
Ectropium	◆	
Entropium	◆	Exceedingly common.
Glaucoma	◆	Mostly chronic.
Hordeolus	2	
Hypermetropia	◆	
Hypopion	2	Olpp and Kühne, 5 cases.
Iritis	◆	
Keratitis	◆	
Keratoconus	◆	
Leucoma	◆	

Myopia	◆	
Neuritis optica	◆	Olpp and Kühne, 4 cases. Jefferys, Fearn.
Obstructio lacrimalis	◆	
Panophthalmitis	◆	Common.
Phthisis bulbi	◆	Exceedingly common.
Pinguecula	1	Olpp and Kühne.
Pterygium	◆	Common.
Ptosis	2	
Retinitis	◆	Lincoln: syphilitic.
Sclerotitis	1	
Staphyloma	◆	Common.
Symblepharon	◆	
Synechia	◆	
Trachoma and Pannus	◆	Both very common.
Xerosis	2	

CLASS VI.

Diseases of the Auditory Apparatus.

Eczema meatus	◆	Common.
Mastoiditis	◆	Common.
Myringitis	◆	
Membranæ tympani ruptio	◆	Instrumental, very common.
Obstructio meatus	2	
Otalgia	◆	
Otitis externa	◆	
Otitis media	◆	Exceedingly common.
Surditas	◆	
Vertigo (auralis)	1	

CLASS VII.

Diseases of the Olfactory Apparatus.

Antri abscessus	1	
Catarrhus æstivus (hay-fever)	◆	Privet cough common.
Rhinitis acuta	◆	
Rhinitis chronica	◆	Atrophic and hypertrophic common.

CLASS VIII.

Diseases of the Nutritive Apparatus.

SUBSIDIARY CLASS 1.

Diseases of the Digestive System.

Adenitis salivosa	◆	Parotid abscess and fistula.
Adenoids	◆	Common.
Angina Ludovici	2	Jefferys, J. L. Maxwell.
Ani prolapsio	◆	
Ani rhagades	◆	
Anus imperforatus congen.	◆	Common.

Aphthæ	..	
Appendicitis	◆	Comparatively very infrequent.
Cancrum orus	◆	Common.
Catarrhus gastricus acutus	◆	
Catarrhus gastricus chronicus	◆	
Catarrhus intestinalis acutus	◆	
Catarrhus intestinalis chronicus	◆	
Cholangeitis	..	
Cholecystitis	..	
Cholelithiasis	1	Reifsnyder.
Colica	◆	
Colitis	◆	Epidemic form reported.
Constipatio	◆	Very common, often with impaction.
Dentis caries	◆	Common, but teeth of the race good.
Dyspepsia nervosa	1	
Enteritis	◆	
Enteroptosis	◆	Common.
Fistula in ano	◆	One of the commonest surgical conditions.
Gastralgia	◆	Park, 15.
Gastrectasis	◆	Exceedingly common, especially among children.
Gastroptosis	◆	Common.
Glossitis	◆	Atrophic, Jefferys: 1 bad case in chronic opium smoker, Lee.
Glossum hypertrophicum	◆	
Hæmatemesis	◆	
Hæmorrhois	◆	Exceedingly common
Hepatis congestio	◆	Common.
Hepatitis acuta	◆	J. L. Maxwell, Tainan, several cases.
Hepatitis chronica	◆	Hypertrophic and cirrhotic.
Hepatitis parenchym. acute	2	Jefferys — 1. Hongkong reports, 1905–1.
Hepatitis suppurativa	◆	Abscess common amœbic.
Hepatoptosis	.	
Hernia intestinalis	◆	All kinds common in proportion.
Hypertrophia tonsillaris	◆	Common and often exaggerated.
Icterus	◆	Very common as a symptom.
Intestini recti strictura	◆	Carcinoma.
Intussusceptio intestinales	◆	Maxwell, Jefferys, Hongkong health reports.
Obstructio intestinalis	◆	Tubercular carcinomatous.
Œsophagostenosis	◆	Common, remarkably so, a special form.
Pancreatitis	1	Probably very common.
Parulis	◆	Common.
Perforatio intestinalis	◆	Typhoid and wound.

Periproctitis	◆	Exceedingly common.
Peritonitis	◆	Comparatively infrequent, tubercular and infective.
Pharyngitis	◆	
Proctitis	◆	Common.
Psilosis (sprue)	◆	Rare among Chinese and not certain.
Pyorrhœa alveolaris	◆	Several reports, common of course.
Stomatitis	◆	Common, gangrenous, syphilitic, dietetic, etc.
Tonsillitis	◆	Follicular and diphtheritic common.
Ulcus duodenum		
Ulcus gastricum	◆	Fairly common.
Uvula descendens	I	Rarely troublesome.

Subsidiary Class 2.

Diseases of the Circulatory System.

A Blood-vessels.

Aneurisma	◆	Common.
Angina pectoris	I	Park, Soochow.
Arteriosclerosis	◆	Mild and comparatively infrequent.
Asthma, cardiac	◆	Common.
Atheroma	◆	Not frequent — Hongkong, 1905, only one report.
Cordis dilatatio	◆	
Cordis hypertrophia	◆	
Cordis palpitatio	◆	Probably common.
Cordis valvularum morbus	◆	Occasional but rather infrequent.
Embolismus	◆	Of lungs.
Endocarditis	◆	Uncommon by comparison.
Myocarditis	◆	Symptomatic common. Fatty(1).
Pericarditis	◆	Few reports, rare.
Phlebitis	◆	
Thrombosis	◆	Portal vein, Hongkong report, 1905.
Varix	◆	

B Lymphatics.

Lymphadenitis	◆	
Lymphangeitis	◆	
Splenomegalia	◆	Common.

Subsidiary Class 3.

Diseases of the Respiratory System.

Asthma, bronchitic	◆	Common — Formosa, Park, Soochow, 219, Hongkong, 16.
Actinomycosis	I	No pulmonary reports.
Atelectasia	◆	Common in children 30 in Hongkong, 1905

Bronchiectasia	◆	
Bronchopneumonitis	◆	Common in children.
Bronchitis acuta	◆	
Bronchitis chronica	◆	
Croup, spasmodic	1	Park, Soochow.
Emphysema pulmonalis	◆	Common.
Gangrena pulmonalis	◆	
Hæmoptysis	◆	
Hæmothorax	◆	From wounds common.
Hydrothorax	◆	Rare by comparison because seen late.
Laryngitis acuta	◆	
Laryngitis chronica	◆	Also syphilitic and tubercular.
Malleus (glanders)		No reports.
Œdema pulmonalis	◆	True acute, 1 case, Maxwell.
Parasites:		
a. Paragonimus westermani	◆	Korea common, Amoy rare, Formosa rare.
b. Strongylus apri		Shanghai in swine, 2 cases Jefferys.
Pleuritis acuta	◆	
Pleuritis chronica	◆	Tubercular.
Pleuritis purulenta (empyema)	◆	Common.
Pneumonitis syphiliticum	2	
Pneumonoconiosis		No report, but where stone or coal are used for commercial purposes, must be found.
Pneumothorax	◆	Common.

CLASS IX.

Diseases of the Organs of Locomotion.

Achondroplasia	2	Plummer.
Ankylosis	◆	Common.
Arthritis	◆	Rheumatic, rheumatoid, gonorrheal, all common.
Arthritis deformans	1	Olpp and Kühne, 2 cases.
Arthritis:		
Tubercular	◆	Common.
Syphilitic	◆	
Atrophia senilis	◆	
Bursitis	◆	Housemaid's knee, Lee, Jefferys.
Caries	◆	
Charcot's disease	1	Hankow, C. C. M. M. Assn.
Contractura	◆	
Ganglion	◆	
Gangræna	◆	
Myalgia acuta (rheumatism)	◆	
Myalgia chronica (rheumatism)	◆	
Myositis	◆	

Lumbago	◆	Very common, of course.
Omalgia, etc.	◆	
Necrosis	◈	Abundant.
Osteitis	◆	
Osteomalacia	2	Reifsnyder and Newell.
Osteomyelitis	◆	
Osteitis rareformis	◆	Otte; bound feet common.
Syphilitic	◈	Comparatively very common.
Tubercular	◈	Common.
Periostitis	◆	
Pes planus	◆	Exceedingly common.
Synovitis	◆	
Thecitis	◆	Common.

CLASS X.

Diseases of the Skin and Connective Tissue

Abscessus	◆	
Acne	◆	
Allopecia areata	◆	
Blastomycosis		No report: probable, see C. M. J., July, 1907.
Carbunculus	◆	
Cellulitis	◆	
Clavus	◆	
Condyloma acumenat.	◆	
Cutis fissuræ	◆	
Demodex folliculorum		
Dermatitis exfoliativum	◆	
Dermatitis herpetiformis	◆	
Dermatitis seborrheicum	◆	Especially in children.
Dermatitis papillaris capillitii	◆	
Dermatitis venenata	◆	
Dysidrosis	◆	An. and hyper.
Elephantiasis	◆	Very common.
Ecthyma	◆	
Eczema	◆	Common, rubrum especially.
Erythema	◆	
Favus	◆	Very common and extensive
Furunculus	◆	Various types.
Herpes simplex	◆	
Herpes zoster	◆	Common and extensive
Ichthyosis	◆	
Impetigo contagiosa	◆	
Lepra	◆	Common.
Lichen planus	2	Lee several cases: Jefferys.
Lupus erythematosis	◆	One perfect case, Jefferys.
Lupus vulgaris	◆	Common and extensive.

Miliaria papulosa	◆	
Molluscum contagiosum	1	Reifsynder.
Molluscum fibrosum	◆	Jefferys.
Mycetoma		
Onychia	◆	
Paronychia	◆	
Pediculosis	◆	All three varieties.
Pemphigus neonatorum	◆	
Pemphigus vulgaris	◆	
Pernio	◆	
Pinta		Not reported.
Pityriasis rosea	◈	Lee, several: Jefferys, McCartney.
Pityriasis rubra pilaris	1	Park, Soochow.
Prurigo	◆	
Pruritus	◆	
Psoriasis	◆	
Purpura	◆	
Rhinoscleroma	1	Johnson, Ichowfu.
Roseacea	◆	
Rubella sinensis (wind measles)	2	Reid, Shanghai, C. M. J. IV., 35. 1 case in foreign child, Macleod, common.
Sarcopsylliasis (*Pulex penetrans*)		
Scabies	◆	Exceedingly common and extensive.
Scleroderma	◈	Elephantiasis.
Scrofuloderma	◆	Common.
Sudamina	◆	
Sycosis	2	Reifsnyder: Olpp and Kühne
Tinea corp. et cap.	◆	
Tinea imbricata	◆	Formosa common.
Tinea versicolor	◆	Fairly common.
Trichophytosis	◆	
Tuberculosis verucosa cutis	2	Reifsnyder and Garner.
Ulcus	◆	All varieties.
Unguis involutus	◆	Not very common.
Urticaria	◆	Common.
Urticaria bullosa	1	G. Guinness.
Verruca	◆	
Xanthoma	◆	
Xeraderma pigmentosa	1	Jefferys.

CLASS XI.

Venereal Diseases.

Adenitis inguinalis	◆	
Arthritis gonorrhoica	◈	Common.
Chancroid	◆	
Epididymitis	◈	
Fistula urinalis	◈	Common.

Gonorrhœa	◆	Common, all varieties.
Ophthalmia gonorrhoica	◆	Common.
Orchitis	◆	Very common, all kinds.
Prostatitis	◆	Hodge says very common.
Syphilis consecutiva	◆	
Syphilis primitiva	◆	
Urethræ strictura	◆	Common and aggravated.
Verruca acuminata	◆	Common and large.

CLASS XII.

Diseases of the Genito Urinary Apparatus.

(Nonvenereal.)

Balanitis	◆	
Calculus	◆	Very prevalent in Canton and other provinces.
Cryptorchidismus	◆	Jamieson, Jefferys, Maxwell.
Cystitis	◆	Common.
Diuresis		No report: symptomatic and medicinal.
Enuresis	◆	Common.
Extrophia vesiculæ	1	Jefferys.
Glandulæ prostatæ hypertrophia	◆	Uncommon.
Hæmaturia	◆	Symptomatic.
Hydrocele	◆	Common and exaggerated.
Nephritis acuta	◆	
Acute exudative	◆	
Acute hemorrhagic	◆	
Acute suppurative		
Acute productive		
Chronic exudative	◆	
Productive	◆	
Tubercular	2	Jefferys, Hongkong reports, 1905.
Nephritis amyloidosis	◆	Exceedingly common after chronic suppuration.
Nephritis chronica	◆	
Nephrolithiasis	◆	Fearn, A. W. Tucker, Hongkong reports, 1905.
Nephroptosis	2	Olpp and Kühne: Maxwell.
Paraphimosis	◆	
Perinephritis	◆	Abscess (2 cases) Jefferys: Maxwell and Hongkong reports.
Phimosis	◆	
Pyelitis	2	Ascending gonorrhœal, etc.
Spermatorrhœa	◆	Common and much complained of.
Urethritis simplex	◆	Very common.
Urinæ incontinentia	◆	Common.

Urinæ suppressio	◆	Symptomatic.
Urinæ retentio	◆	Atonic and obstructive.
Varicocele	◆	Rare and never complained of; Park, 1, in a year 1887.

CLASS XII*a*.

Diseases of the Genito-Urinary Apparatus in the Female.

Endometritis	◆	
Extrauterine pregnancy	◆	J. P. Maxwell. Booth, Hongkong reports.
Hydrosalpinx	2	Fearn, Maxwell.
Hymen imperforat	1	Lee.
Mastitis	◆	Very common.
Malformatio uteri	◆	Double and absent.
Malformatio vaginæ	◆	
Placenta previa	◆	
Puerperal endometritis	◆	
Salpingitis	◆	Rare, very by comparison.
Vaginitis	◆	Gonorrhœal common.

CLASS XIII.

Cysts and New Growths.

Adenoma	◆	
Angeioma	◆	
Carcinoma	◆	External common, internal rare.
Chondroma	◆	Rare.
Cystis	◆	
Epithelioma	◆	
Fibroma	◆	Very common and large.
Glioma	. .	Not reported.
Lipoma	◆	
Myxoma	◆	
Neuroma	◆	
Osteoma	◆	
Sarcoma	◆	All varieties common.

CLASS XIV.

Injuries.

Abrasio	◆	
Ambustio ex calore	◆	
Ambustio ex electricitate	◆	
Ambustio ex frigore	◆	
Ambustio ex venenis	◆	
Ambustio ex X-radiore	. .	Not yet reported.
Asphyxia	◆	
Asphyxia ex submersione	◆	
Cartilaginis intraarticularis dislocatio	. .	Not reported.

Concussio	◆	
Contusio	◆	
Deformitas	◆	
Dislocatio	◆	
Fames	◆	Common.
Fractura	◆	Rare in the interior by comparison.
Fulminis ictus		No report.
Hernia	◇	
Ictus electricus	◆	
Membri clades	◆	
Musculi ruptio	◆	
Visceris ruptio	◆	
Sitis	◆	
Solis ictus	◆	Uncommon among Chinese.
Stremma	◆	
Virium defectio		
Vulnus contusum	◆	
Vulnus incisum	◆	
Vulnus infectum	◆	
Vulnus laceratum	◆	
Vulnus punctum	◆	Very common.
Vulnus sclopeticum		

CLASS XV.

Extraneous Bodies.

Corpus extraneum	◆	Very common and varied.

CLASS XVI.

Poisons.

Alcoholismus	◆	Comparatively very rare, but growing more common.
Venenum irritans	◆	Phosphorus and alkalies: "hair-gum", arsenic, glass, gold.
Venenum neuroticum	◆	Opium and stramonium.
Vulnus venenatum	◆	Snakes, centipedes, scorpions, poisonous fish, rabies, etc.

CLASS XVII.

Feigned diseases	◆	Beggar class

PART II.

MEDICAL.

CHAPTER III.

INFECTIOUS DISEASES.

Plague, Dengue, Malta Fever, Enteric Fever, Typhus Fever, Cholera.

PLAGUE.—*Syn.—Pestis.*

The **distribution of plague** in China is of special interest as exemplifying the laws that affect the progress of this disease throughout the world at large. Essentially plague is a tropical disease, and through tropical and subtropical China it is endemic. The endemic nature of the disease, however, does not prevent its frequently appearing in a severe epidemic form. Indeed, there is good reason to believe that the last great series of epidemics commenced from the province of Yunnan. Generally speaking, then, plague may be considered endemic and epidemic to the south of the twenty-eighth parallel of north latitude in China, including Formosa and French Indo-China, but is only met with in its epidemic form north of that line, and arising from imported cases of the disease. Like other rules, however, this is not quite free from exceptions. Sporadic cases have been reported from the Yangtse Valley (Hume), and plague is endemic and epidemic at Niuchwang in north latitude 40° 58′. The year 1894 may be considered the date of the modern plague revival (Stanley).

Ætiology.—The cause of plague is the presence of the **Bacillus pestis** in the buboes, blood, lungs, and other tissues. The Bacillus pestis is a short rod-shaped bacillus, exhibiting a marked bipolar staining reaction, the intermediate portion of the rod remaining almost uncoloured by reagents. (See Appendix.)

It has been conclusively shown that the ordinary, though perhaps not the only, carrier is the rat; in fact, there are many reasons for believing that plague is primarily a rat disease. Indeed, in many parts of China the people commonly call plague "the rat sickness." It has further been shown by the Indian Plague Commission that the ordinary transmitting agent from the rat to other animals, and we may conclude also to man, is the flea.

It has been said that the usual sites of entrance of the bacillus are cracks, scratches, and abrasions on the feet of the bare-footed natives. The absurdity of this statement will be evident to all in China, when we remark that there is no special disproportion in favour of the female sex, though the majority of women over the endemic area bind their feet, and even keep on the bandages at night.

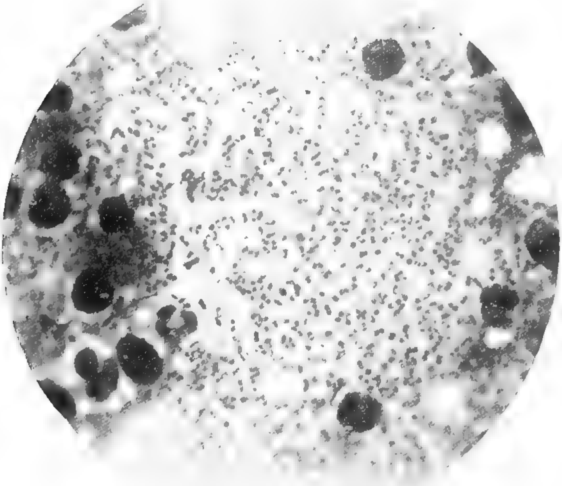


FIG. 15.—Bacillus pestis. Smear from gland juice, 1/12 oil immersion.

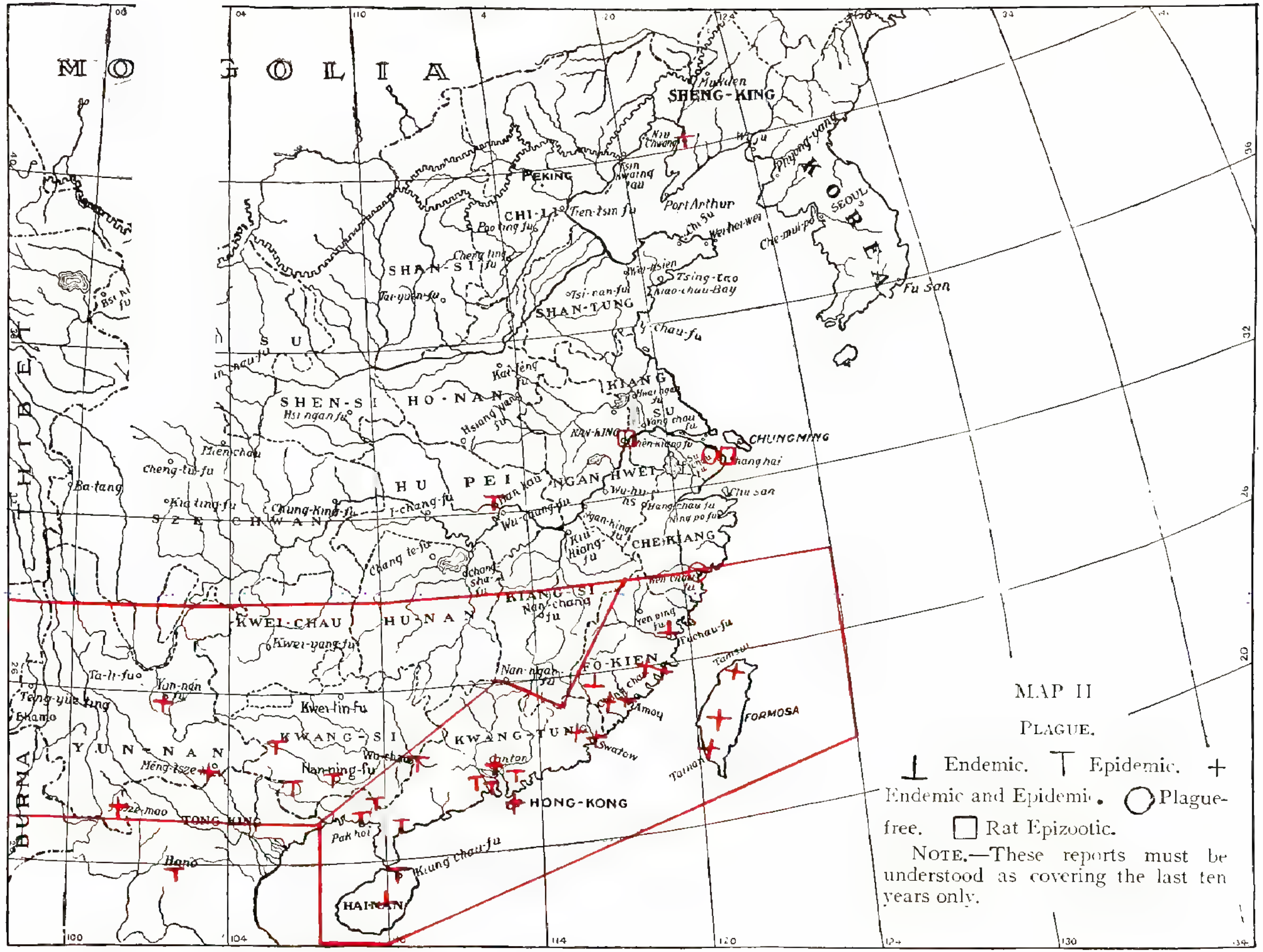
The **incubation period** averages from four to six days, though it may be very much shorter or very much longer than this.

The effect of **climate** on the spread of an epidemic is still undetermined and, indeed, seems to vary in different localities. In Formosa we have repeatedly observed that the first torrential typhoon rains have at once put an end to an epidemic in the city of Tainan, but the same has not been as apparent in the country villages.

Sex exercises no influence, males and females are attacked equally; but in pregnant women the disease is very fatal and abortion almost constant.

Age.—The most frequent age to be attacked is from twenty to thirty years. Old people less commonly acquire the disease and infants very seldom.

Clinical Picture.—Plague divides itself into three main types.



MAP II

PLAGUE.

⊥ Endemic. ⊤ Epidemic. + Endemic and Epidemic. ○ Plague-free. ☐ Rat Epizootic.

NOTE.—These reports must be understood as covering the last ten years only.

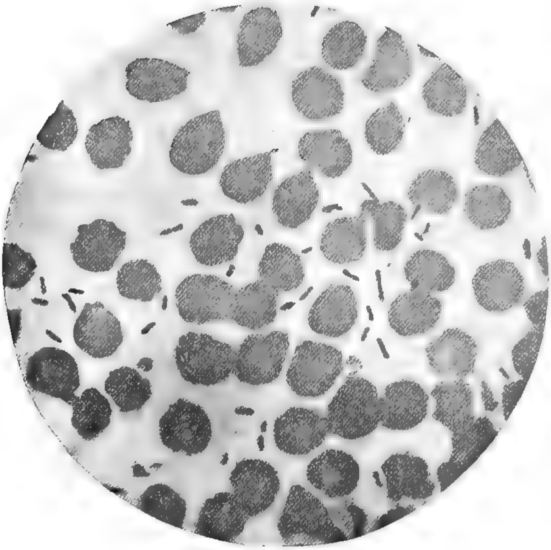


FIG. 16.—Bacillus pestis. Blood film, 1/12 oil immersion.

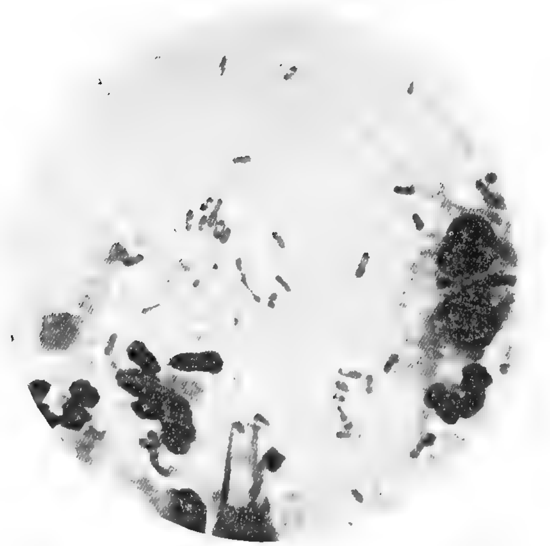


FIG. 17.—Bacillus pestis. Spleen smear. (*By Bell and Sutton, Hongkong.*)

Bubonic plague is characterised by the presence in one or more situations of a large mass of swollen and matted lymphatic glands forming the **bubo.** The prodromal symptoms are few and unimportant, and the disease is usually sudden in onset. High fever with initial rigor, or in children convulsions, marks the commencement of the illness, while perhaps the most striking sign of the disease is the extreme rapidity with which bodily and mental prostration ensues. Pain and enlargement of one, or occasionally of more, groups of lymphatic glands accompany, and sometimes precede, the onset of the fever. Severe headache, with blood-shot eyes, and great restlessness quickly develop, accompanied often with vomiting and occasionally diarrhœa. Wild delirium is sometimes a marked feature, but these symptoms in fatal cases rapidly pass on to an asthenic condition, death ensuing about the third or fourth day.

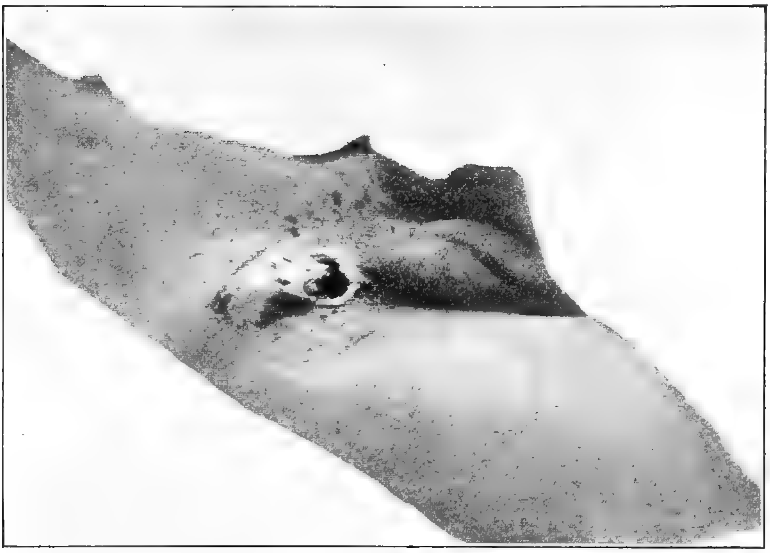


FIG. 18.—Inguinal Bubo. (Reproduced, by kind permission, from Simpson's Treatise on Plague, 1905.)

The **temperature** runs a characteristic course, rising at the onset to 105° F. or higher; it remains high for the first three days, and then falls in favourable cases to normal or nearly so, to rise again about the seventh or eight day with the commencement of suppuration in the bubo.

The urine is high coloured and deposits urates, a trace of albumin is often present.

The buboes, at first quite small and discrete, very rapidly swell and become adherent, the mass breaks down, the skin over the site reddens, and sinuses form which persist for many months.

If incised early, that is immediately after suppuration has commenced, the whole adherent mass of glands will be found to have necrosed, and can be shelled out, though with some difficulty.

The buboes in the order of their frequency will be found to occupy the following positions:

The inguinal region, deep and superficial glands being involved.

The axillary region.

The glands at the angle of the jaw and neck.

And rarely in other situations, including the internal lymphatic glands.

In the very earliest stages, the affected glands may be felt as discrete nodules; very rapidly, however, periglandular inflammation takes place and the glands become one adherent mass. While in a very few cases the bubo may absorb, in the large majority of cases suppuration ensues, the skin over the bubo becomes red and œdematous, and during the second week of the disease the abscess begins to point. **Skin lesions** are sometimes present, and it is probable that occasionally these are primary. These lesions vary greatly in different epidemics and in different countries. The only ones we have ourselves seen in Formosa have consisted of hæmorrhagic bullæ scattered very sparsely over the body; cases with these are very rapidly fatal. We have been told also of others with profuse purpuric eruptions, and in some epidemics these have been the rule. Cases with boils, blisters and pustules are described, and these are said to be of a milder type.

The **sequelæ of plague,** with the exception of the troublesome sinuses remaining from the suppurating buboes, are unimportant, except that pyæmic abscesses may follow untreated or insufficiently treated buboes.

Death usually takes place from the third to the fifth day. In favourable cases, convalescence is, as a rule, very long delayed and sinuses may persist for many months.

Septicæmic plague is, in our own experience, the next in frequency to the bubonic variety.

With or without slight enlargement of the lymphatic glands, and certainly without the formation of massive buboes, signs of acute septicæmia develop, and the bacillus is found in enormous numbers in the blood. A terminal septicæmia is probably present in all fatal cases of bubonic plague, but the term septicæmic plague should be confined to those cases where a septicæmia is the main element and true buboes are absent.

The symptoms are those of the bubonic variety more rapidly developed, and in a more intense form. Extreme restlessness occurs in the early stages, passing rapidly into coma and death; indeed, death may intervene so rapidly that symptoms have hardly time to develop. As an example of this we might give the case of a child whom we noticed playing about in apparently ordinary health at 9 A.M., but who, a little later, was seized with a rigor, became rapidly comatose, and was dead before noon from septicæmic plague. In less virulent cases the spleen rapidly enlarges, and hæmorrhages may take place into the bowel or stomach.

Pneumonic plague is in our experience the third in frequency of the ordinary varieties of plague; it has, however, in some localised epidemics been the most common form of the disease. It is the form of plague which is the most important as being the only variety of the disease which in man can be considered seriously infectious. The name is a bad one, as the signs and symptoms vary enormously, from those of a typical bronchopneumonia to the simplest form of bronchitis, death in these latter cases taking place quite unexpectedly. A better name, then, for this morbid entity would be pulmonary plague.

The importance of the disease can, perhaps, be best exemplified by a concrete case: a Chinaman of thirty-five years of age presented himself at the Tainan Hospital, asking admission for blood-spitting. As there were a large number of cases seeking admission, we examined him cursorily and found him to be spitting up blood-stained sputa and to have scattered râles over his chest. Temperature about 100° F., and patient did not appear very ill. He was admitted to a general ward and the pathological clerk told to examine the sputa for tubercle bacilli. The clerk came to us an hour later, saying that he could find no tubercle bacilli, but that the sputum was crowded with germs, staining like plague bacilli. On examination this was found to be correct. The patient was removed and died two days later. This man, whom no one would have suspected of suffering from plague, was, as a matter of fact, expectorating enormous quantities of plague bacilli in all directions.

Pestis Minor.—No account of the various forms of plague would be complete without a mention of pestis minor. The disease consists in a local enlargement of lymphatic glands with little or no fever, and ends either in absorption or suppuration, and this sometimes precedes or follows an epidemic of true plague. Several years before the outbreaks of plague on the south coast of China idiopathic buboes prevailed there (Scheube). On the other hand, such idiopathic buboes occur without any connection in time with plague epidemics, and bacilli, when found in the buboes, are not typical forms of bacillus pestis. Hence the question of the relationship of pestis minor to true plague is still quite unsettled.

The **mortality** of plague is always high, though varying between considerable limits. For Europeans it is usually given at from 10 per cent. to 50 per cent., and for Asiatics at from 60 per cent. to 95 per cent.

The **diagnosis** of plague, except perhaps in a very few acute cases at the commencement of an epidemic, is with proper care extremely easy. The acute collapse, characteristic facies, with frequently the presence of a bubo, make the diagnosis in a typical case self-evident. The direct bacteriological examination is, however, the test on which we have come ourselves more and more to rely. In bubonic plague, however small the bubo when first seen, the characteristic bacillus can be found with absolute ease and certainty by direct puncture of the gland with a hypodermic needle. If a little gland juice can be drawn into the needle this is all that is required, and if any difficulty in obtaining this be encountered, a few sharp movements of the point of the needle in the gland will allow sufficient to be drawn up for microscopic examination. In the case of septicæmic plague we are at issue with the authorities who state that the bacillus is late in appearing in diagnostic quantities in the blood. Our own experience in Formosa is that, even by the second day of the disease, bacilli are present in very large numbers and can be readily demonstrated in a simple thick smear preparation of the blood by the usual staining methods. In pneumonic plague the bacillus abounds in the sputa, and is easily recognised there.

The literature of **plague prophylaxis** is enormous, and unfortunately much of it is based on altogether untenable premises. While acknowledging the danger of too dogmatic a statement of the case, we believe that the only proved elements of infection are:

1. The rat.
2. The flea.
3. The pneumonic patient; possibly to some slight extent the septicæmic patient.

It follows that the attempt to remove all cases of plague to isolation hospitals and segregation of all contacts is as absurd as it is impossible. In no way that we can imagine can a bubonic patient infect his neighbours, and though it is possible that fleas might carry the infection from a septicæmic case to a healthy individual, even here it is doubtful if this occurs. The pneumonic patient is a source of great danger to his neighbours, and should be isolated at once, but happily these cases are, as a rule, rare. If the energy spent over the removal and isolation of bubonic cases had been devoted to preventing infection from the rat, we believe that much more might have been done to stamp out plague. But the question still remains, in what direction should such measures be taken?

Rat destruction is a very desirable thing, but it is still doubtful whether the most energetic destruction of rats leads to anything more than a very temporary decrease in their numbers, and it must be remembered that the viruses employed with some considerable effect in cold climates fail in tropical and subtropical regions to produce any epizootic among rats. The provision of rat-proof dwellings is of course impossible on a large scale. We believe that the following measures will prove the most efficacious, and are simple enough to make them seem reasonable even to uneducated minds, and they do not involve any very great expense.

1. When a case of plague appears in a house or dead rats are found in any number, a through cleansing of the whole house with removal of the furniture into the yard should be insisted on at once. The walls of the rooms should be white-washed, and any holes where floor and walls meet filled up with cement. The floors should be thoroughly washed with an effective antiseptic and pulicide, such as Jeye's fluid, 1 ounce to the ordinary 4-gallon oil-tin of water. The furniture before being returned to the house should also be washed with this mixture.

> "The rat population appears to be limited only by the supply of food available, so that measures having for their object the limitation of their food supply, such as careful collection of garbage, keeping house refuse in properly covered receptacles, keeping food supplies in rat-proof places both in the house, and stable, and general cleanliness about the house, alley, and street would be likely to have good result."—*Stanley, Shanghai.*

All houses in an endemic area should be turned out and thoroughly cleaned twice a year.

2. Pneumonic cases should be carefully isolated.

3. All contacts in a plague house or in one where dead rats are found in any number should receive prophylactic injections.

4. The inhabitants of infected districts should be encouraged to keep cats.

The treatment of plague naturally falls for consideration under three heads: prophylactic, medical, and surgical.

Prophylactic treatment consists in the vaccination of the contact, and if possible, of a bulk of the population with some preparation of killed bacilli. Quite a number of these vaccines have been prepared by different observers, but only two have gained any large repute, Haffkine's and Kitasato's. For the methods of preparation of these vaccines we must refer our readers to the larger works on the treatment of plague. The results only interest us here. The values of the two preparations seem to us to be very much the same, but the Japanese vaccine appears to cause less physical disturbance as the result of the inoculations. We have ourselves experienced the inoculation of Kitasato's vaccine on four occasions, so can speak from personal experience of the very little inconvenience it causes. The actual method of inoculation is a very simple one. The emulsified vaccine is injected with a hypodermic syringe into the muscles between the scapulæ, 1 c.c. being the dose for the first, 1.5 c.c.

for the second, and 2 c.c. for the third inoculation given at seven-day intervals. The effect of the smaller dose is a slight stiffness of the back muscles, with a little malaise lasing for twelve hours or so. With the larger doses there may be also some slight rise of temperature, but the discomfort is not enough to interfere with work. The result of the inoculations, as shown in the epidemic of 1901 in Formosa, was to reduce the number of attacks of plague in the inoculated to 0.19 per cent. as compared with 2.80 per cent. in the non-inoculated, and the deaths of those attacked to 56 per cent. in the inoculated as compared with 84 per cent. in the non-inoculated. That is, inoculation reduced the chance of a person's acquiring plague about fifteen times, and if attacked gave him rather less than twice the chance of recovering from the disease. Further experience has fully borne this out, and we strongly recommend that at least all contacts and all persons from a house where rats have been dying in numbers should be thus inoculated.

No **medical treatment** can be regarded as a specific for plague.

Treatment with curative serums has again and again been vaunted as the one thing needful, but experience has shown all these serums as uncertain in their action and quite unreliable. The only medical treatment of plague which seems to have been at all effective has been the use of heroic doses of carbolic acid. How this acts we have no knowledge, but we have ourselves tried the treatment with apparently some success. Carbolic acid should be administered in doses of 10 grains of the pure acid, mixed with plenty of rice-water, every four hours, and the dose reduced if carboluria is set up. It is remarkable, however, what enormous doses of carbolic acid a plague patient may take before any sign of this appears. Otherwise the medical treatment must be purely symptomatic. Cardiac failure is perhaps the most striking symptom with which we have to deal, and for this we have had some success in the use of large doses of digitalis. We generally give 5 minims of the tincture every hour, when cardiac collapse is threatened. Strychnine we have tried and given up as useless for the acute stage, but in favourable cases a strychnine tonic may be of considerable value in the long period of convalescence.

Surgical treatment merits a far more careful consideration than is usually given to it. Bubonic plague is not a septicæmia, but a local development of the disease in the affected lymphatic glands, and only when the resistance of these is overcome does a terminal septicæmia ensue. The logical treatment of all early cases of bubonic plague, therefore, is excision of the bubo. The principle of surgical treatment was indeed better realised a hundred years ago than it is now, when, carried away with too enthusiastic a search after a serum, surgical methods have fallen into disrepute. The French physicians, during the war for the conquest of Palestine, in 1799, established as the general method of treatment in plague **the incision of all those buboes which did not present signs of suppuration.** With modern surgery we need hardly say that excision should supersede incision. We seem to apply logical conclusions to every other disease, why not to bubonic plague? Either we must revise our pathology or else admit that early excision is the only reasonable treatment. If suppuration has already supervened the demand for surgical measures is still as urgent, for the tendency of the pus is to infiltrate in all directions, and the sinuses, if the pus is left to make its own way to the surface, only heal up after many months of prolonged suppuration.

DENGUE.

Dengue is a specific and very highly infectious disease attended commonly by a skin eruption and rheumatoid pains, but very protean in its form. It periodically invades South China, but only spreads north during the hot season. It is essentially a disease of hot climates. According to the Chinese, in Formosa an epidemic may be expected once in ten years. So infectious is dengue that Main, Hangchow, reports 90 per cent. of the inhabitants of that city attacked in one epidemic.

Ætiology.—An ultra-microscopic parasite which can pass through a filter, and which is probably conveyed by a mosquito, perhaps Culex fatigans.

Incubation period varies from one to three or four days.

Sex and Age.—Both sexes and all ages are equally liable to the disease.

Clinical Picture.—It cannot be too strongly insisted on that dengue is a disease of protean form. In our own experience it would be quite a mistake to adopt the common description of initial rash, fever, and terminal rash, and in this description we shall abide by what we have ourselves seen in Formosa. Our ordinary clinical picture, then, is as follows:

The patient being apparently in perfectly good health is suddenly seized with a feeling of chilliness or a definite rigor, followed by fever and pains all over the body. The temperature is now found to be 103° to 105° F.; the pulse is very markedly accelerated, probably to 120 or more; tongue is furred; anorexia marked, and prostration profound. This continues for two or three days, when there is a sudden remission of all the symptoms with sweating and diarrhœa, and the patient seems to be quite recovered; but on the fourth or fifth day the temperature rises again, and the rash makes its appearance. The characteristic rash is a fine, discrete, bright red, slightly raised eruption which rapidly becomes confluent in places and closely resembles the rash of measles. It differs from this, however, in its distribution, the face being much less affected in dengue. The fever falls again in about twenty-four hours, and the rash begins to fade, scaly desquamation continuing for a week or ten days. With the recurrence of the fever there is a return of the pains, which now become located in one or two joints, and often persist in these long after the original disease has disappeared.

This constitutes a typical attack, but the following atypical forms are quite common:

1. **The Initial Rash.**—Following on the commencement of the fever an erythematous eruption breaks out in a number of cases. The rash is of a purplish red colour, and, attacking as it does particularly the face, makes it appear bloated and swollen. In our experience in Formosa, initial rashes were not present in more than 20 per cent. of the cases.

2. An intestinal form was observed by us, most commonly in children. The attack commenced like an ordinary bilious attack, the temperature never rising very high. Indeed, the cases could not have been diagnosed but for the terminal eruption.

3. Mild cases which run an afebrile course, but show the typical eruption, and others where both eruptions are absent, and in which the diagnosis can only be reached with some probability by observing that the febrile symptoms are concurrent with other cases of dengue in the same house.

4. The diseases known as three-day and seven-day fever seem likely to prove atypical forms of dengue, the temperature in these diseases being very suggestive of dengue.

Mortality.—The real mortality of the disease is *nil;* but of course it may prove the fatal determining incident in other acute or chronic diseases.

Diagnosis in individual cases at the commencement of an epidemic may be very difficult. The disease, however, always occurs as an epidemic, and is thus, as a rule, quite easy of diagnosis.

Treatment.—No treatment will cut short an attack, and this should therefore be purely symptomatic. A saline diaphoretic may make the patient more comfortable during the febrile stage. Convalescence is apt to be protracted, and an iron and arsenic tonic may be required.

The only other point of importance is the treatment of the bone and joint pains, which may persist for some considerable time. Salicylates are useless, and probably the most effective drug is antipyrin, which should be given in doses of 15 grains for an adult, frequently repeated. Aspirin in the same doses is also recommended.

MALTA FEVER.

Malta fever is a disease characterised by an undulant form of fever with alternating pyrexial and apyrexial periods of quite uncertain length.

Prevalent along the Mediterranean littoral, it is but rarely seen in China, or perhaps it would be more correct to say but rarely diagnosed. Reports of cases have come from Shanghai, Chungking, Fukien, Formosa, and other places, and it is probable that fevers formerly called by local names (Shanghai fever, Hangchow fever, Tamsui fever, etc.) are manifestations of this disease.

Ætiology.—Bruce in 1887 demonstrated the *Micrococcus melitensis* in the spleen in Malta fever. It is also present in abundance in the lymphatic glands, very sparsely in the blood, but plentifully in the urine of patients. The specific micrococcus, a germ of very small size, commonly appears singly or in pairs, occasionally in groups of four, but never in chains except on culture media. The disease has been shown in Malta to have been conveyed to man through the milk of the Maltese goat, 50 per cent. of which showed the specific agglutination reaction to the *M. melitensis*, while 10 per cent. were passing large numbers of micrococci with the milk. While there must be other modes of infection, this is the only one which so far has been conclusively proved.

The **incubation period** is probably, on the average, a long one, but is very difficult to fix. In five cases of accidental inoculation it varied from five to fifteen days.

Clinical Picture.—The incubation period resembles that of other specific fevers, beginning with headache, general malaise, and anorexia. The temperature then begins to rise by regular steps, the spleen is large and tender, the tongue becomes furred and some cough and signs of pulmonary congestion are common. The picture, in fact, so resembles enteric fever in its early stages, that, especially in sporadic cases, a differential diagnosis at this period is hardly possible. With the disease well established, that is about the commencement of the second week, the temperature will have risen to 103° or 104° F. with a morning remission of a degree or so, and this continues for another week without much change, followed in a favourable case by a fall in the course of the third week by gradual steps to normal once more. Then comes a period of apyrexia, lasting three or four days to a week, and then once more the pyrexial period is repeated. This continues often for several months, on an average three or four months, but the tendency as time goes on, is for the apyrexial periods to last longer and for the range of temperature during the pyrexial periods to be more limited. Accompanying the fever the most definite signs are marked enlargement and tenderness of the spleen, rheumatic-like attacks in the joints, and profuse night-sweats. The arthritic symptoms very closely resemble those of acute rheumatism: redness, with swelling and great pain in the affected joint, with rapid flitting of the pain from one joint to another. The anorexia often becomes less marked as the disease progresses, and the patient will have sometimes quite a hearty appetite despite the presence of the fever.

While the temperature usually follows the course outlined above, two others types of fever are sometimes observed. The apyrexial periods may be quite omitted and the fever last continuously over a period of months, or again a daily remittent type of fever is sometimes described.

Mortality is about 2 per cent., and death usually results from exhaustion from the long-continued fever; occasionally, however, fatal attacks of hyperpyrexia may occur in the ordinary course of the disease, and very rarely a malignant form ending quickly with hyperpyrexia has been described.

Diagnosis.—The chief difficulty in diagnosis is between this and enteric fever. When it is remembered that rose-spots are usually absent from the latter disease in the tropics and that diarrhœa is by no means always present, the difficulty is greatly intensified. Further, the serum tests in both diseases leave much to be desired. We believe, from our own experience, that not a little of the enteric fever of Formosa and probably of other places in South China is due to a paratyphoid bacillus, and often fails to give the ordinary agglutination test. It is also well recognised that the agglutination test for Malta fever is only really satisfactory where fresh cultures of *M. melitensis* can be obtained, and this is seldom possible in China. Of course time will' prove the correctness of our diagnosis in the case of malta fever, but for the time being we have to rely principally on the presence of joint pains and night-sweats. We believe ourselves that the enlargement of the spleen is much more marked in Malta fever than in enteric, but this of course is worth very little where malaria is ubiquitous. The general appearance of the patient is, to the experienced practitioner, no little help; it is undoubted that the patient with enteric is, as a rule, much more seriously ill, and shows it, than the patient suffering from Malta fever.

Treatment.—Goats' milk must be avoided in endemic areas, but we have as yet no knowledge of such endemic areas in China. Otherwise the treatment should be symptomatic only. Antipyretic drugs should be avoided, and salicylates fail to relieve the joint pains. Cold sponging should be used to lower the temperature if it rises above 103° F. Diet should be light and nutritive, but must not be too restricted. Bacterial vaccines may be of value, but if used at all should be kept for the chronic stage without much fever.

ENTERIC FEVER.

Enteric or typhoid fever is not a disease especially common in the tropics or indeed in any part of China, but seems to be endemic in all latitudes and among every race.

It is not many years since the very presence of typhoid fever among the Chinese was strenuously denied, and while a few may still uphold this view, there is a tendency now to call every case of continued fever which fails to respond to the action of quinine, enteric, and thus to fall into the opposite error. It need hardly be said, therefore, that the diagnosis of typhoid in the tropics is more than usually difficult.

Ætiology.—The cause of enteric fever is the presence of the *Bacillus typhosus* in the alimentary canal, causing in the small intestine an ulcerative lesion of the aggregations of lymphoid tissue (Peyer's patches). It is impossible here to enter at length into the question of the mode of infection; it would, however, appear that the common sources of danger are infected water and food contaminated by flies which have previously rested on material fouled by the excretions of a typhoid patient. The latter can hardly do more than cause sporadic cases, true epidemics must rather depend on the former mode of infection. Epidemics of typhoid of any great extent do not occur in China, and the explanation of this is very simple. Each house, or in some places each group of houses has its own well, and even supposing one of these to become infected, the number of people affected by the disease is very strictly limited. But again the water supply in western lands is usually contaminated by defective drains. As drains for excretory refuse do not exist in China this source of infection is absent. It will only be when some rash enthusiast of sanitary science introduces a theoretically perfect, but practically very defective western method of water supply and drainage into China that epidemics of typhoid will assume a serious form. Further, over a large part of China the inhabitants will drink nothing but hot fluids and these very sparingly, and this no doubt is another safeguard against enteric. Having, however, ourselves watched the very rapid growth in Formosa of a taste among the Chinese for shaved ice and bottled lemonade we feel that this latter safeguard is not likely to last.

Clinical Picture.—We do not propose here to give a general description of the disease, as this can be found in any text-book of medicine. Rather we shall dwell on the main points in which typhoid fever, as commonly seen in China, differs from what we are familiar with in our western experience, and how these differences affect the question of diagnosis.

Temperature.—The patient, if Chinese, is usually well advanced in the disease before the doctor is called in. If the temperature chart is a typical one, great help is given in the diagnosis of the case, for it cannot be too often repeated that malaria is a periodic, and always a periodic disease. We have charts of cases of enteric in Formosa, which conform in every way to the chart of a typhoid case at home. On the other hand, this is the exception rather than the rule. The ubiquity of malaria over a great part of China, and the unfortunate way in which it crops up in association with every other disease, makes it rare to get a typical chart. All cases of fever in the tropics lasting for more than a day or two should have their blood examined for malaria, and as this is now so easy there is little or no excuse for omitting it, but it must be remembered that the finding of the plasmodium by no means excludes typhoid, and the absence of the malarial parasite, though suggestive in a case of continued fever, is by no means conclusive evidence in favour of enteric. Rose-spots are usually absent in typhoid fever in China, and we have ourselves never seen a typical eruption.

Diarrhœa is frequent, and often, with the passing of sloughs or with hemorrhage, quite characteristic, but in rare cases constipation may persist throughout the course of the illness, or, more frequently, the typical form of diarrhœa is absent.

Widal's reaction when positive is, of course, of the greatest help to diagnosis, but we suspect that paratyphoid strains of the bacillus are more common in China than at home and account for a good many failures in this test. A negative Widal is, therefore, of little value. Thanks to Messrs. Parke, Davis & Co., we have now an easy method of performing the Widal's test by use of an emulsion of dead bacilli and sedimenting tubes.

For the **diagnosis,** therefore, of the disease, we have to depend on:

As against malaria—the temperature chart, the blood examination, and the effect of quinine.

As against Malta fever—the diarrhœa, general prostration, and absence of joint pains.

As against a septic process—the absence of a leucócytosis and the temperature chart.

As against acute pulmonary tuberculosis—the absence or slightness of lung symptoms, for the lung symptoms of typhoid are less marked in the tropics.

As against other continued fevers—only experience and the reduction of these to a system can help us.

And of course in each of the above we have the possible help of Widal's reaction.

The **complications and sequelæ** of typhoid differ but little from what we see at home, except that to these we must add that patients coming in after a week or more of illness are probably already commencing large bedsores.

Our experience is not sufficiently extensive to offer more than our impressions on the question of mortality and the relative frequence of complications.

Enteric fever would appear to be much severer among Europeans in the tropics than at home. Among the Chinese we believe that, as a rule, it is a much milder disease. Perforation we believe to be relatively more common in China than in western lands, the absence of nursing probably accounting for this. Hemorrhage, in our experience, is comparatively rare, and we have never seen a serious case of it.

Periostitis, abscesses, laryngitis, etc., are all seen as at home.

Treatment.—Prophylactic.—We have already explained why epidemics of typhoid do not occur in China, and are happily not at present likely to do so. There is only one point of great importance to be insisted on, and this is especially in connection with schools, colleges, etc. The pernicious habit of washing dirty clothing close to the top of the well should be absolutely prohibited, and the tops of wells should be surrounded by a cement or paved area at least ten feet in diameter.

As serious epidemics are unknown and with reasonable care there is little danger of getting the disease, we believe that prophylactic vaccination is uncalled for at present in any part of China.

Medicinal.—It should always be remembered that no drug has yet been proved to cut short an attack of typhoid. Therefore, avoid drugs. Antipyretics, as depressants, are particularly dangerous. Salol in 10-grain doses is probably the least harmful of the drugs generally given. Quinine should only be exhibited when malaria complicates the case, and should be dropped as soon as possible. Sponging or the wet pack should be used whenever the temperature rises over 103° F.

In cases of perforation, operative measures should be proceeded with at once. It is of the greatest importance not to wait till signs of peritonitis ensue, as by this time the chances of success are almost *nil*.

TYPHUS FEVER.

It is with the greatest diffidence that we enter on the subject of **typhus fever** in China. That the disease exists and occurs from time to time in epidemic form there can be no possible doubt; on the other hand, we believe it to be certain that epidemics of subtertian malaria, of relapsing fever, of typhoid fever, of cerebrospinal meningitis, and possibly of other undetermined fevers, have constantly been reported under the name of typhus. That shrewd observer, Jamieson, of Shanghai,[1] remarks:

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[1] Imp. Customs Med. Reports, thirty-sixth issue, p. 52.

> "It is clear that the term typhus has been loosely used everywhere in the East to designate any form of fever or any disease presenting profound typhoid symptoms. There is, it is true, no sufficient *a priori* reason why typhus should not be endemic in any one given region as well as in any other, and merely require drought or floods, with their inevitable accompaniments of bad crops, famine, overcrowding, and filth, to call it into activity. 'The history of typhus is the history of human misery and neglect,' but it is not the only fruit of misery; and doubtless typhus, typhoid, remittent, and relapsing fevers have all from time to time been described as typhus by observers who have seen these various diseases only in the latest stages or who in their student days had had no opportunity of studying true typhus in one of its natural homes."

With this proviso, it should be said that North and Central China are the parts of the empire most affected by this disease, epidemics having been reported frequently from many districts in these regions. Typhus is certainly rare in tropical and subtropical China, but the explanation for this may be simple. The northern and central parts of the empire include all the districts most affected by famine and flood. The former is comparatively rare in the warm, damp south, and it is probably to this only that the south owes its relative freedom. Given the proper conditions, we believe that typhus would affect all parts of China alike.

Ætiology.—Typhus is an intensely infectious disease, perhaps one of the most infectious we know. There can, therefore, be no doubt whatever of its microbic origin. The actual microbe has not as yet been clearly demonstrated.

Incubation period is about twelve days, but may be as short as two.

All **ages** are affected and both **sexes**, but men rather more commonly than women.

Mortality varies greatly in different epidemics, but, generally speaking, is between 10 per cent. and 20 per cent. of those attacked.

Clinical Picture.—The prodromal symptoms are those of the ordinary eruptive fevers with anorexia, malaise, and sickness followed by rapid rise of temperature, till on the third or fourth day the patient has to take to his bed with a temperature of 103° or 104° F. Between the third and the sixth days the characteristic mulberry rash appears, at first on the abdomen and chest, but later spreading over the whole body with the exception of the face and neck. The rash consists of two eruptions, superficial, slightly raised papules resembling those of measles, which come out first, and a subcuticular mottling which appears a little later. The papules tend to become petechial. The rash lasts about seven days, disappearing by the end of the second week.

In the early part of the disease there is a stage of nervous excitement marked either by acute maniacal outbreaks or only a low muttering delirium, but by the second week the patient passes into a condition of absolute prostration, with extreme muscular weakness, frequently loss of control of the sphincters, and congestion at the bases of the lungs. The tongue becomes dry and cracked, the urine scanty and high coloured, with a trace of albumin present in it. The temperature continues raised to 104° F. or more for two weeks, and then falls usually by crisis, convalescence being established with wonderful rapidity.

In fatal cases death usually occurs during the second week from exhaustion, sudden cardiac failure or pulmonary congestion.

Treatment.—Since no drug will shorten the attack, the treatment should consist in careful attention to the frequent administration of liquid nourishment to sustain the patient's strength. Small doses of opium may be required to relieve the sleeplessness, and chloral for active delirium. Cardiac stimulants will frequently be needed and care must be taken that the bladder is regularly emptied, the catheter being used if required.

Plenty of fresh air, and a well ventilated room are very important adjuncts to the medical treatment.

CHOLERA.

Cholera shares with plague the distinction of being the most serious epidemic disease of China, and of the two it is easily the first in its frequency and extent. There is probably not a city of importance in China which has not been visited by cholera during the last half-century. Shanghai has had at least twelve severe epidemics during this period, but we have also reports, though much less complete, of epidemics of cholera in the extreme north, extreme south, and extreme west of the empire, as well as from many intermediate places. In 1820–21 the disease seems to have swept over the whole empire, causing an incalculable mortality, but it need hardly be said that details of such epidemics in China are difficult to obtain and seldom reliable.

Ætiology.—The cause of cholera has been conclusively shown to be the comma bacillus of Koch. Whether the same bacilli may at times be present in the alimentary canal without causing any choleraic symptoms is possible, though we consider that this is not yet completely established.

Macleod and Milles,[1] in Shanghai, conducted an investigation into the subject of cholera in China in 1889 and showed that the disease there was, as in other parts of the world, due to Koch's bacillus and to that alone.

The comma bacillus is a rod curved in the shape of a comma, being about half the length and twice the thickness of a tubercle bacillus. The germ is found in pure culture in the typical cholera stools, and is undoubtedly conveyed by contaminated water, and very likely also by flies.

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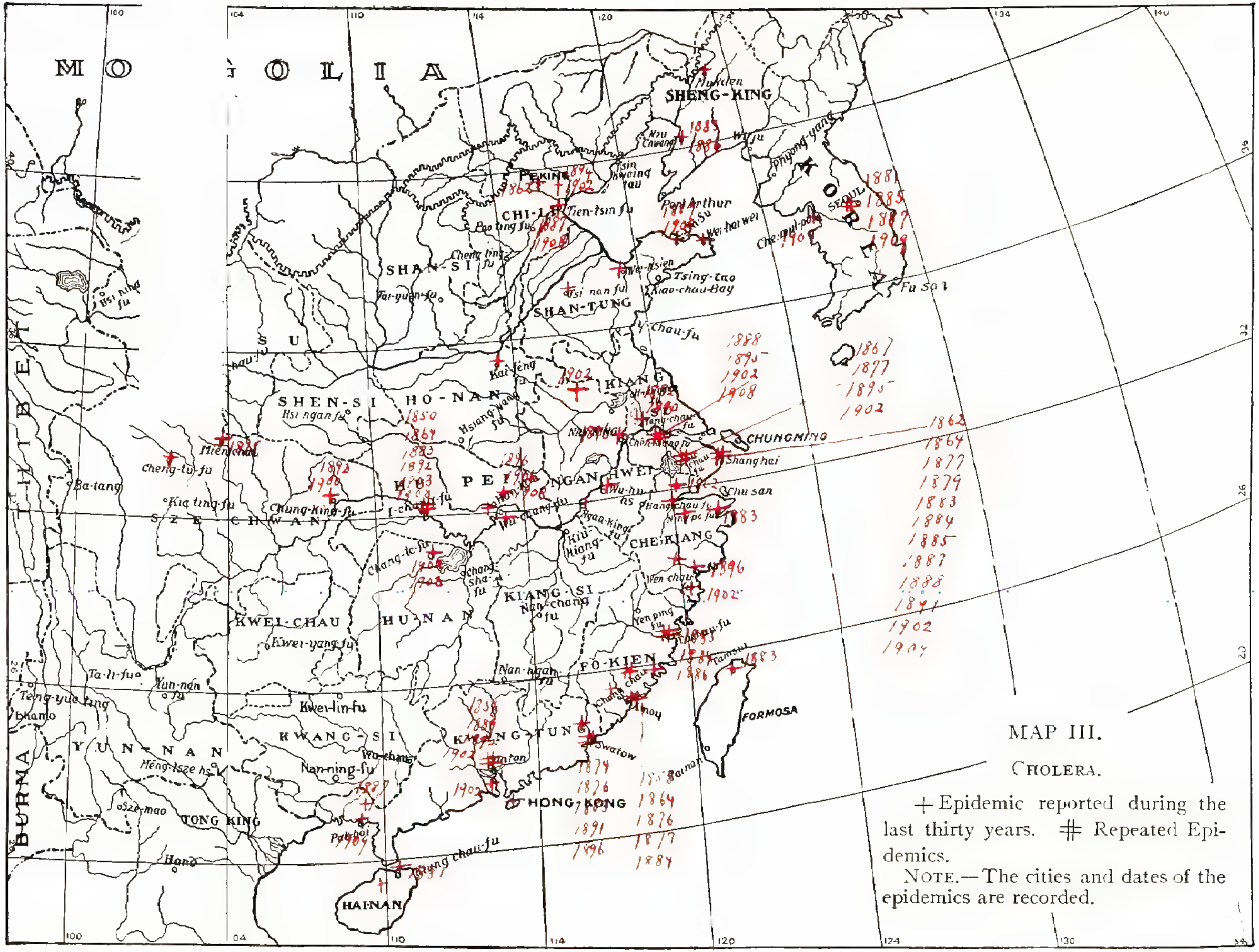
[1] Journal of Society of Medical Officers of Health, 1889.



MAP III.

CHOLERA.

+ Epidemic reported during the last thirty years. ⌗ Repeated Epidemics.

NOTE.—The cities and dates of the epidemics are recorded.

Incubation Period.—Probably from two to three days.

All **ages and both sexes** equally affected.

Mortality about 50 per cent.

Clinical Picture.—Cholera may begin with a prodromal stage of diarrhœa occurring with increasing frequency, but it often commences without prodromal symptoms of any kind, the stools becoming almost at once of the typical so-called "rice water" type. Quoting from Macleod and Milles, of Shanghai:

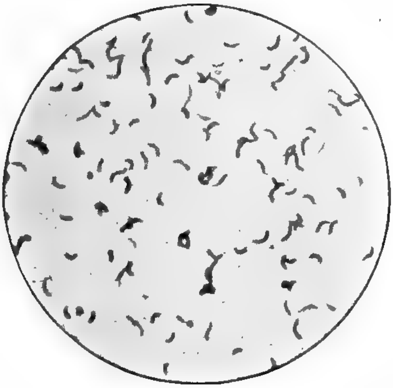


FIG. 19.—Cholera spirilla. (*From Pitfield's Bacteriology.*)

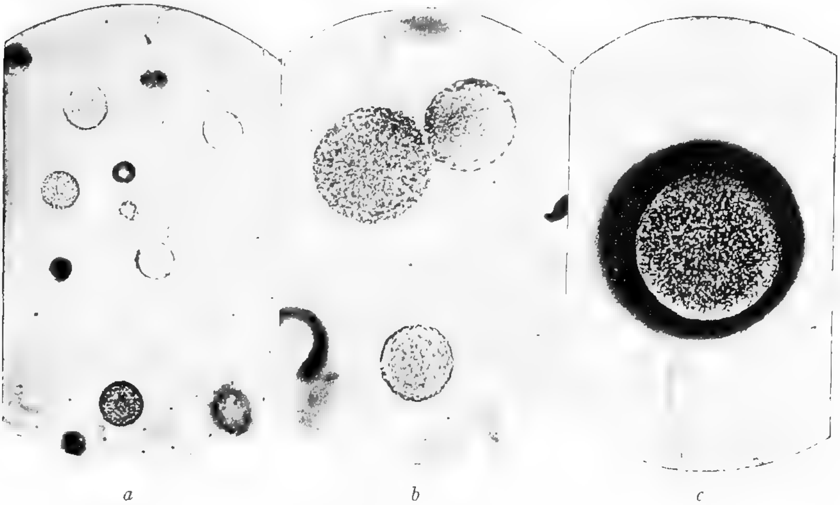


FIG. 20.—Spirillum of cholera, colonies on gelatine plates (× 100 to 150). *a*, Twenty-four hours old; *b*, thirty hours old; *c*, forty-eight hours old. (*Fränkel and Pfeiffer.*)

"The term 'rice water' applied to stools does not give a true idea of the cholera stool. Rice water is non-transparent and has finely granular matter dispersed through it rendering it opaque when shaken up, whilst the typical chlora stool is almost transparent, or slightly opalescent when seen in a glass vessel, having no odour or but a faint meaty smell, and containing white flakes, consisting of mucous shreds, but which are not present in sufficient quantity to render the fluid opaque."

After an hour or two vomiting sets in, at first of stomach contents, but before long of the same "rice-water" material. Accompanying the purging are intense and griping pains and cramps of the muscles of the abdomen and extremities. Owing to the combined action of the terrible pain and the extraordinary loss of fluids, the patient passes rapidly into a state of extreme collapse, with restlessness, intense thirst, and clammy perspiration, the face becomes thin and pinched, the voice lost and the urine suppressed; the temperature of the body surface falls considerably, but per rectum the thermometer may show a rise to 102° F. or more. This constitutes the "algide stage" of cholera, and may pass on at once to a fatal termination after from twelve to twenty-four hours' illness. In favourable cases, however, the frequency of the stools gradually diminishes, the surface of the body becomes warmer, and less shrunken in appearance, and the cramp pains disappear, the urine being again secreted. This change of condition gradually leads on to a period of febrile reaction. This may be quite slight and the patient gradually recover, but in other cases it is very severe, attended with considerable rise of temperature and erythematous rashes, and may pass on into the so-called "cholera typhoid." Under these circumstances the patient passes into that collapsed condition known as the typhoid state, the urine remains practically suppressed and what is passed contains albumin and casts. The stools are greenish-yellow and highly offensive, and death results from enteritis or uræmia.

The **sequelæ** are numerous, but may be divided into chronic intestinal troubles, the result of the acuteness of the bowel catarrh, and septic complications, as bed-sores, parotitis, gangrene, etc.

Treatment.—In the matter of **prophylaxis** it is sufficient to lay down three rules in case of an outbreak of cholera:

1. All drinking water and milk is to be boiled. Note: this prohibits the use of bottled ærated drinks and lumps of ice in the fluids consumed, as also ices, unless made with boiled water or milk.

2. The exclusion, as far as possible, of flies from the house, and the careful use of fly-proof covers for all food materials.

3. The greatest care in disinfecting the excretions of the cholera patient and his garments.

Medical treatment may be divided into specific treatment and symptomatic treatment.

Specific treatment by a cholera vaccine has been attempted, but has so far failed to win general confidence.

Quinine has been very strongly recommended by a number of observers, especially by Professor Koch, and some considerable success has been met with in its use. Ten-grain doses should be given every hour, until the rice-water stools have disappeared and bile appears again in the motions. Carbolic acid and perchloride of mercury have also been recommended.

The chief symptoms needing treatment are the cramp pains and the enormous loss of fluid.

For the pain opium should not be given by the mouth, as it often remains unabsorbed and may produce symptoms of poisoning when the power of absorption is reëstablished. Morphia has in some quarters been much condemned, but repeated small hypodermic injections of the drug combined with atropin are invaluable in relieving the cramps, the terrible pain of which is one of the causes of the collapse.

To meet the great loss of fluid it is necessary to supply liquid in some form or other. To do this by the mouth is often impossible, owing to constant vomiting, and to the almost complete cessation of the function of absorption. Fluid must therefore be conveyed to the body in some other way and this should be by injection of normal saline solution, either subcutaneously or by the venous channels. If venous infusion be employed, saline solution should be used at a temperature of about 115° F., in the container, the latter should be raised from 2 to 3 feet above the site of injection, and the administration of fluid continued for four or five hours. Cox, of Shanghai,[1] has given the best description we have read of this process, and has himself invented an apparatus for keeping the infusion at a constant temperature. This strikes us as a little complicated, and a simpler plan would be to use an ordinary quart-size Thermos flask in the place of any special form of apparatus. The fluid may in this way be kept very nearly at a constant temperature for all the time that it is required.

If subcutaneous injections be employed, the same apparatus may be used replacing the vein canula with an exploring syringe needle. The needle is plunged into the subcutaneous tissue under the breasts, at the side of the chest, in the abdominal wall, or elsewhere. The container must be raised considerably higher than in intravenous infusion. When about 2 pints have been injected into one spot, the position of the needle should be changed. In all, at least 5 or 6 pints should be given.

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[1] Report on an Outbreak of Cholera in Shanghai, by S. M. Cox, M. D. Methodist Publishing House, Shanghai.

CHAPTER IV.

LEPROSY. BERI-BERI.

The association of these diseases may strike our readers as somewhat strange. We acknowledge that it is purely arbitrary, but it has this in its favour, that we thus associate two diseases, of which our knowledge of the pathological agents is elementary. In the case of beri-beri we are still quite in the dark as to the causal agent, whether bacterial or toxic. In the case of leprosy, while there are good reasons to believe that the commonly assigned bacillus is specific, yet, failing as it does to fulfill Koch's laws, the discovery of the bacillus has hardly increased our knowledge of the pathology and treatment of the disease.

LEPROSY.

Leprosy is a common disease over a large part of China, including Korea and Formosa. It is, however, very variable both in **its distribution** and its virulence.

In Formosa we estimate its incidence among the Chinese at roughly 1 in 400 of the general population. Manson[1] for Amoy, Fukien, 1 in 450. Wong[2] estimates the number of lepers in the province of Kwang-tung at 10,000. Dudgeon[3] for Shantung 1 in 1,000. Barbeyieux[4] gives the numbers for Yunnan at 1 per cent. of the population, but we cannot help thinking that this must be a grossly exaggerated estimate. We have also reports of the presence of the disease with greater or less frequency, from the provinces of Chih-li, Kiang-su, Che-kiang, An-hwei, Hu-peh, Sze-chuan, and Kiang-si. It is evident, therefore, that the disease is extremely common, and the total number of lepers in China must run into hundreds of thousands.

It has often been stated that leprosy in China is confined to the southern provinces, the north of China being free from the disease. We had hoped to have been able to have completely settled this question, but our reports are not sufficiently concise to dogmatise for so extensive an area as North China. Leprosy is, however, found commonly in Shantung Province; it is present, but rarely, in the province of Chi-li, is abundant

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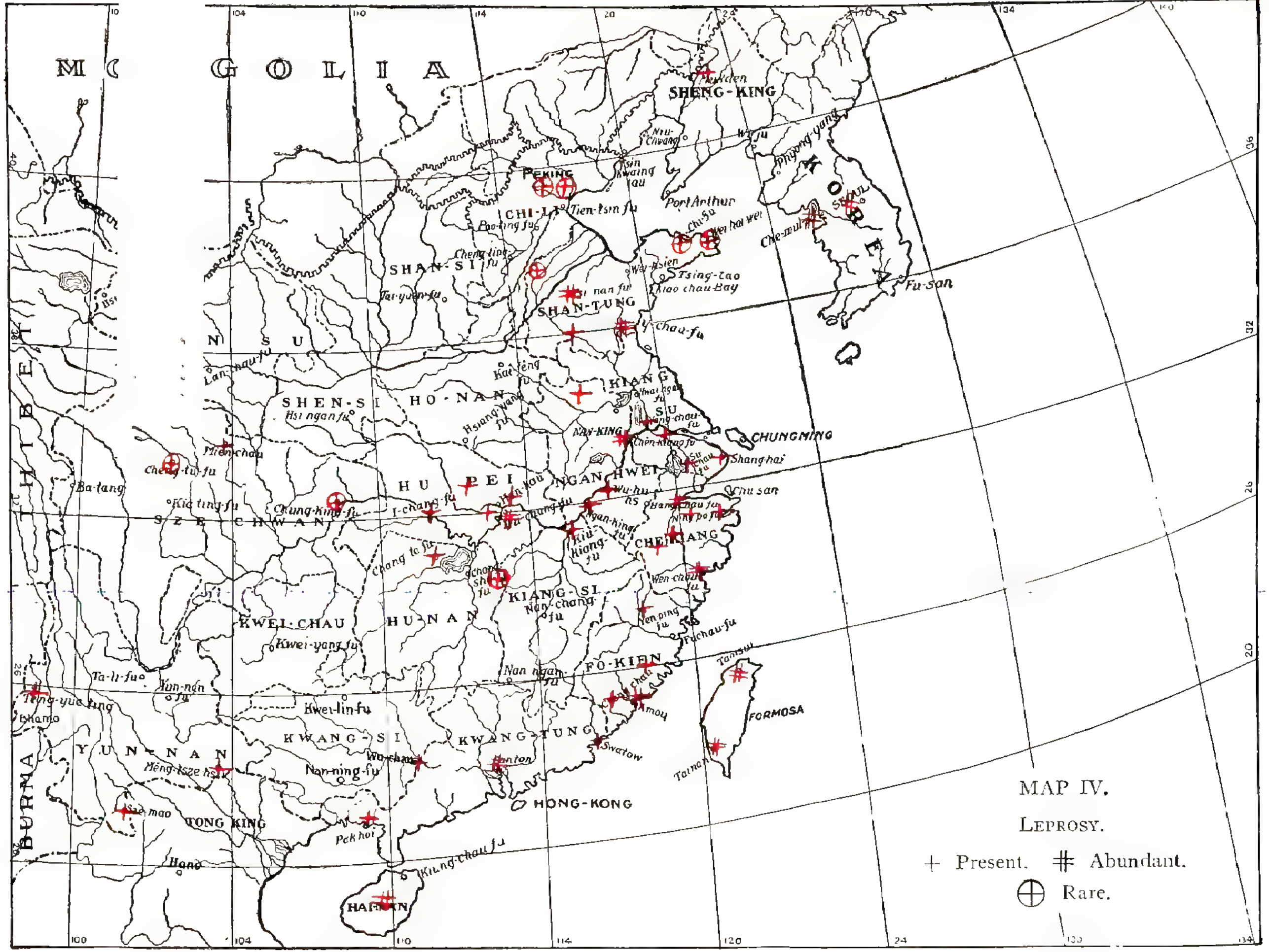
[1] *Imp. Customs Med. Reports,* 1881, Vol. I, p. 27.
[2] *Imp. Customs Ibid. Reports,* 1873, Vol. II, p. 41.
[3] *Imp. Customs Ibid. Reports,* 1872, Vol. II, p. 40.
[4] *Imp. Customs Ibid. Reports,* 1904, Vol. I, p. 29.



MAP IV.

LEPROSY.

+ Present. # Abundant.

⊕ Rare.

in Korea, and anything but rare in parts of Manchuria. The statement we have referred to is therefore incorrect, but we are unable, at present, to say whether it contains any truth in reference to the other provinces not mentioned here. So much is true, that, speaking generally, leprosy is **relatively rare in the north** of China as compared with the south.

On the other hand, there is some reason to believe that **in tropical China** the disease is on the whole **of a milder type**; very severe cases may be met with, but are relatively rare, while when we proceed north the proportion of mutilating cases seems to get higher. If we are correct in this view, it accounts for the desertion of the old classification for a new one, which takes little account of the milder forms of the disease, as the writers have usually described the leprosy of cold climates.

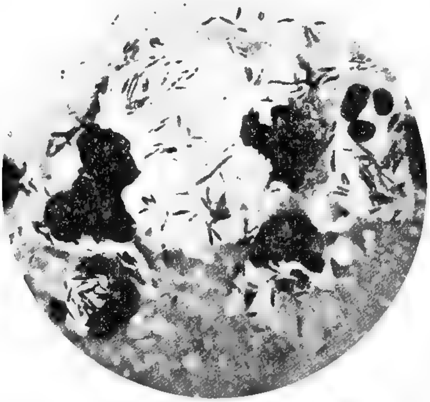


FIG. 21.—Bacillus of leprosy in tissue. (*Rosenau.*)

Ætiology.—We take it for granted that the cause of leprosy is **the bacillus lepra.** It, however, fails to conform to two of Koch's postulates for specific bacteria, *i.e.*, it cannot be cultivated outside the body, or be successfully inoculated into animals. Even inoculation into man has usually failed to transmit the disease. The bacillus closely resembles the tubercle bacillus, both in shape and staining reactions. Differentiation of the two can only be certainly made by animal inoculation.

The **mode of infection** by which the bacillus is carried to man is quite unknown. There is no evidence in favour of any hereditary transmission of the disease or diathesis. It is also extremely difficult to get histories of direct infection. In some parts of South China, there is a strong belief in infection through sexual intercourse, the scientific evidence for which is nil. In many parts of China the disease is believed to be infectious, and the leper shunned. Thus McCartney, Chung-king,[1] says: "The

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[1] *Imp. Customs Med. Reports*, 1894, Vol. I, p. 4.

Chinese look upon leprosy as highly contagious and will not allow a leper to mingle with them." In other places, as in Formosa, the leper, except in the last stages of the disease, mixes with the ordinary population. Indeed, in Formosa, we have a proverb which shows very plainly how little importance the Chinese put on the infectiveness of leprosy:

"Sleep in the same bed with a leper, but do not be neighbour across the street to a man with itch."

The **incubation period** is long. Cases have been reported commencing twenty or more years after leaving the only spot where infection was possible. It is impossible to give a minimum period, but we have on one occasion seen leprosy well marked in a child of six months.

Race.—Leprosy is more frequent in the coloured than in the white races, but as we know nothing of the sources of infection we have no right to thereby postulate an immunity for the latter race.

Sex is not of great importance, but males are more frequently attacked than females.

Age.—Leprosy attacks every age, but is commonest between twelve and thirty; it is rare in very young children, but as we have just stated, we have seen one case in Formosa of well-marked leprosy in an infant of six months.

Clinical Picture.—In our description of the forms of leprosy, we shall revert to the old classification of macular, nerve, and nodular leprosy, and of mixed cases where more than one type is seen. We believe that this is the proper classification, and that in dropping the macular form the later authors have dwelt only on the experience of colder lands.

The **macular variety,** when of a pure type, is a very mild form of the disease. We meet with it not uncommonly in Formosa. In its typical form it occurs as small **patches** of slightly raised erythema, sometimes scattered all over the body, at other times rather strictly localised. When the areas are large, the centre loses to a great extent its colour and the spots become ringed in appearance, and in very old patches the red colour often turns to an earthy brown. The hair drops out, and perspiration does not occur in the infected areas. The patches are anæsthetic; in some cases the anæsthesia is not very well marked, in others it is profound, but in all on careful examination a diminution of sensation to pain and an inability to recognise hot and cold are found. In these cases pemphigus spots (watery blisters) sometimes occur as a prelude to a spread of the leprous patches, but the body temperature is little, if at all affected, and there are no constitutional symptoms to herald the further advance of the disease. Mutilation is never the direct result of this form of leprosy. Indirectly, however, it may follow as the result of injuries, burns, etc., of the hands, when the anæsthetic patches occur on these. The duration of this type of leprosy is very uncertain. We have watched one case for more than seven years, and are unable to say that the disease has materially progressed during this time. Another case which has been fairly steadily progressive for the past six years has become very markedly worse during this period of time. This form is the most amenable to treatment of any type of the disease, and often further spread of the trouble may be completely prevented.

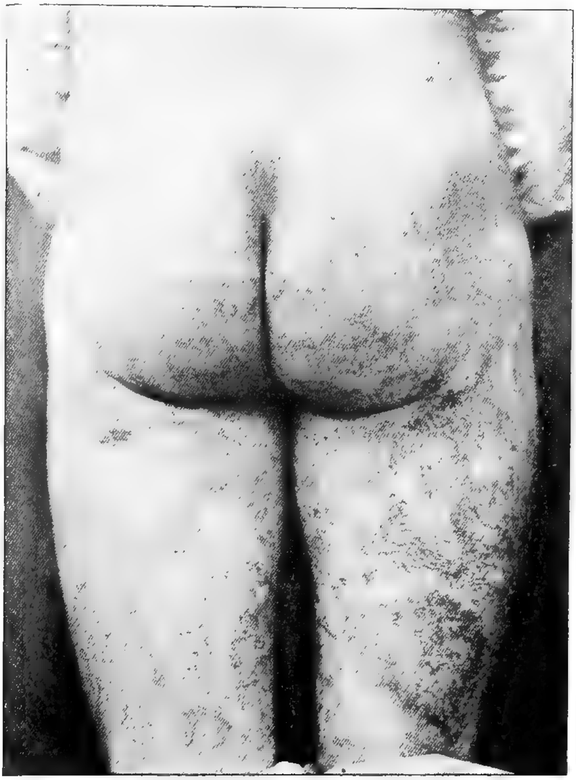

FIG. 22.—Macular leprosy. (*Van Harlingen after Leloir.*)

The question has been put to us, whether this **is really a form of leprosy** at all? We unhesitatingly answer in the affirmative. 1. Because a loss of temperature sensation is very rare under any other condition than leprosy, and where it occurs, as in syringomyelia, the other signs of the disease are quite different from those of macular leprosy.

2. Because this condition may be seen along with the more pronounced stigmata of leprosy in mixed cases.

3. Because occasionally lepra bacilli are to be found in the nasal secretion of these patients.

The **anæsthetic variety** when pure is often of a very mild type. Indeed, it is in some ways quite the mildest type of the disease. We recognise it in Formosa in its pure form in two principal varieties. **An ulnar form,** where the ulnar nerve is especially affected, and may be felt to be greatly thickened. The thenar and hypothenar eminences become completely wasted, and gradually the typical main-en-griffe is developed. There is, however, no mutilation, and indeed often little or no trophic changes in the fingers. The other form is characterised by **perforating ulcers** of the soles of the feet; the ulcers are usually symmetrical. Very often in these cases the only evidences that we have of the presence of leprosy are these ulcers and a certain amount of anæsthesia round them. This type of leprosy can hardly be said in itself to threaten life. We know of cases of perforating ulcers of the feet of thirty years' duration, which have developed in all that time no other signs of leprosy. This type is, however, extremely resistant to treatment.

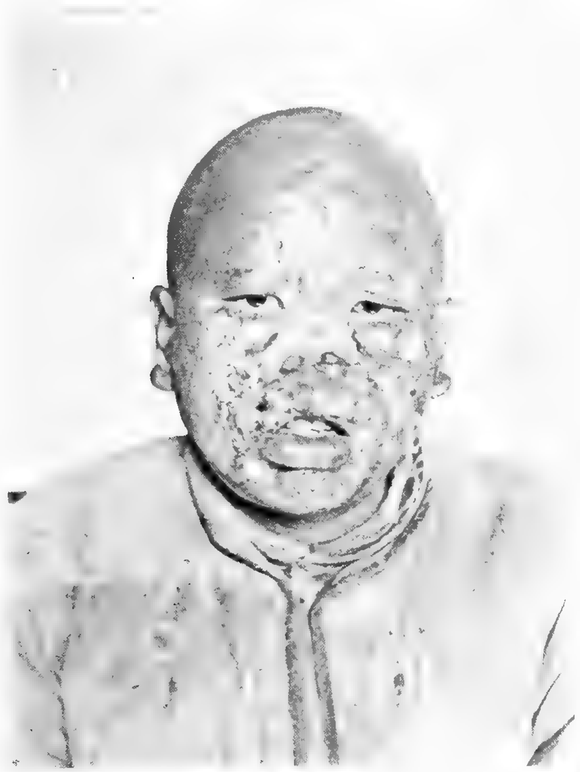

FIG. 23.—Advanced form of tubercular leprosy. (*By H. Fowler, Hsiao-kan.*)

The Tubercular Variety. It is to this variety that we owe the mental picture which the word "leper" calls up. It is he who has touched the imagination of writers and travellers, and in many places quite the minority in numbers, it is he who has been taken to represent the whole type of the disease. There are indeed few more terrible pictures of humanity than that provided by the advanced tubercular leper.

The hair of his eyelids and eyebrows has completely fallen out, and on his head it often remains only in patches. The face is disfigured by the tubercles which are most common on the forehead and cheeks, giving it the typical leonine appearance, and many of these are ulcerated. The contraction of such ulcers has probably caused double ectropion of the lower lids. The bridge of the nose has gone. The eyes are bleared and watery, even if the result of the ectropion has not yet reached its natural termination of xerosis and ulceration of the cornea, followed by blindness. The larynx has been attacked and the voice is nothing but a hoarse and raucous whisper. The ears are distorted and ulcerated. The body has ulcers all over it; the hands, partly from injury to the anæsthetic fingers, and partly owing to the direct action of the disease, have lost

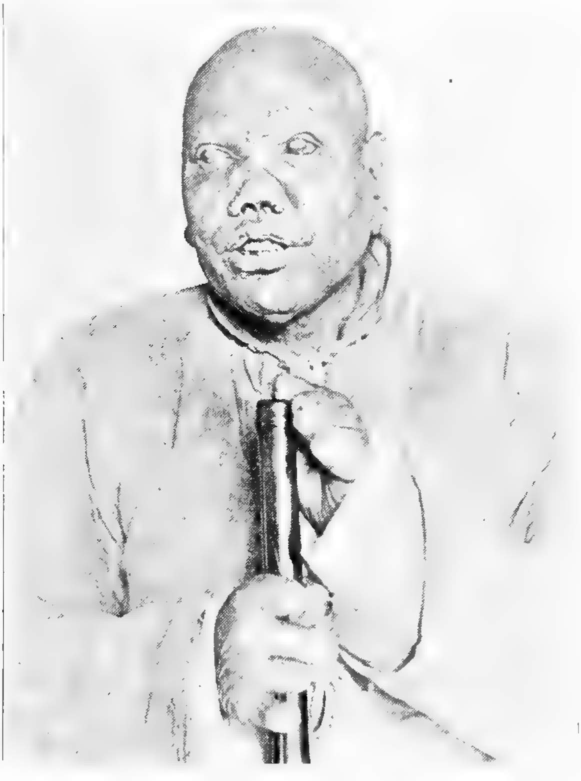

FIG. 24.—Advanced form of tubercular leprosy. (*By H. Fowler, Hsiao-kan.*)

most of their digits, ulcerating half-healed stumps taking the place of these. The feet are in the same condition but worse. All the toes may have gone, and the patient is able only to hobble about on his stumps. There is indeed hardly a more grievous sight to be found in the world than a man "full of leprosy." The course of the disease is steadily to a fatal termination, usually within a few years of the onset.

Mixed Cases.—These are very common. Perhaps the most common of all are the first two types combined, the macular-anæsthetic variety. We need give no further description except to say that the lesions of the two types appear each in its characteristic form in the patient.

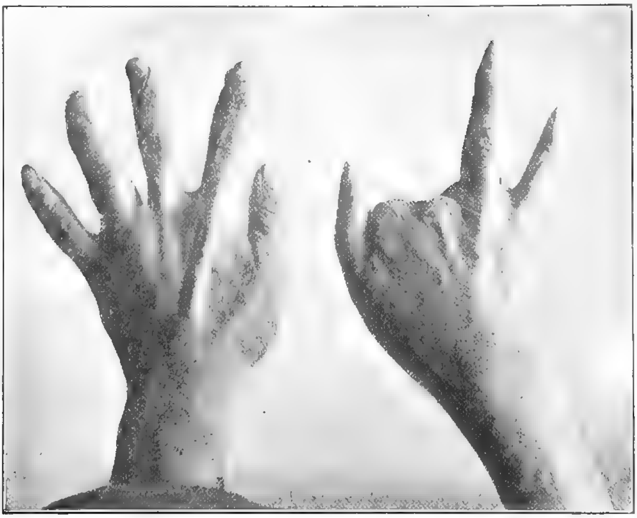

FIG. 25.—Hands in nerve leprosy. Loss by amputation of two digits of right hand and beginning trophic changes in last two fingers of left. (*By Jefferys.*)

Then, again, the tubercular variety may be associated with the anæsthetic, or even more commonly with the macular form.

Diagnosis.—The diagnosis of leprosy in the large majority of cases is quite simple. A typical case of any of the forms is easily recognised by any man of experience in the disease. Occasionally, however, a difficulty arises in the likeness that some forms of the tubercular type have to tertiary syphilitic disease. Indeed, many cases of bad tertiary syphilis of the face are called by our lay brethren leprosy. Careful examination, however, will soon reveal the true nature of the disease, and considerable assistance may be obtained by examining the nasal secretion for the lepra bacillus. In very early cases, too, of the macular type some difficulty may arise in making a diagnosis. For this we rely mainly on two symptoms, the loss of temperature reactions, which in very early cases may be merely a quantitative loss rather than a qualitative loss of sensation, and in the absence of sweating from the affected areas.

Treatment.—Preventative treatment is that on which we must rely to remove the scourge of leprosy from China. But what form is this to take? Two points appear of the greatest importance to consider.

1. *Personal Hygiene.*—Leprosy affects the richer classes but rarely; by far the larger majority of cases coming from the poor who, if not dirty in their persons, are, at any rate, very far from cleanly in their homes. If it were possible at once to make the houses of the poor in China clean and well ventilated, leprosy would soon be a disease of rare incidence or unknown. We do not know at present how the bacillus is carried but the evidence we have is all in favour of the nasal discharge being the infective element. We are not going to suggest that the use of handkerchiefs would remove leprosy out of the category of Chinese diseases, but to any who have seen the popular method of the removal of nasal mucus, and who remember that in a large proportion of lepers such mucus is teeming with lepra bacilli, it is not difficult to understand how leprosy may spread from man to man. The teaching of cleanly habits of person and home should have a prominent place in the instruction given in all our schools, a much more prominent place than is given to the subject at present. In lepers themselves ulcerating lepra nodules should be carefully dressed, and it would seem an unnecessary suggestion had not our eyes so frequently seen the absolute disregard of such a rule, that lepers with ulcerated fingers should be strictly forbidden to take any part in the preparation of the family's meals.

FIG. 26. Tungkun Leper Home and Hospital.

2. The question of **isolation and leper asylums** also calls for careful consideration. The leper asylums at present in China are voluntary institutions and, splendid examples as they are of Christian kindness for the afflicted, and enormous as is the good that they do for this class of sufferers, most of them are of no use whatever as places of isolation. What part the isolation of the diseased has taken in the disappearance of leprosy from European and other lands has been a subject of much dispute, but we believe that the balance of the evidence is distinctly in favour of such isolation being an important factor in the removal of leprosy from the list of diseases in many of these countries. The undoubted fact that leprosy is caused by a definite bacillus is greatly in favour of such a contention, and it must be remembered that from time to time leprosy has appeared in epidemic form,[1] a point very strongly in support of such a proposal.

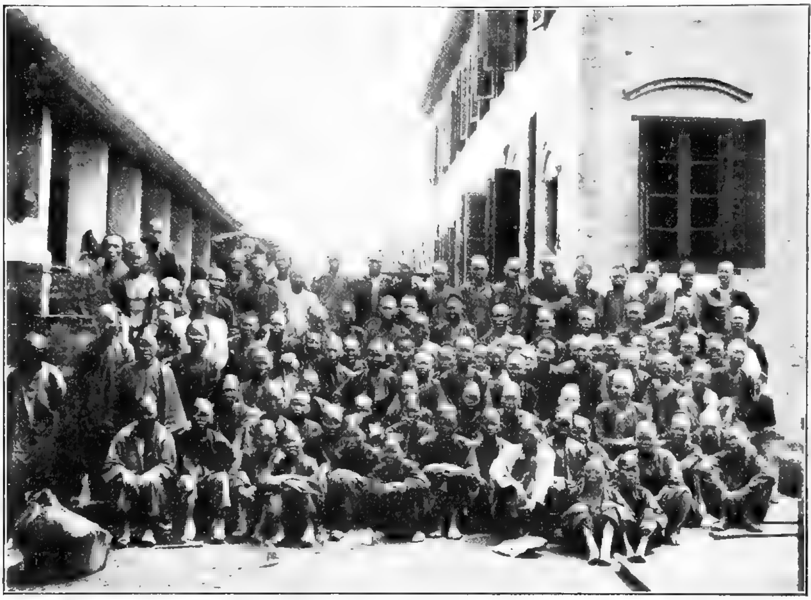

FIG. 27.—Inmates of the Tungkun Leper Home.

Steps of such a nature must of course be taken by the central or local governments, but the **education** of these depends on medical men in China, and this point should be kept well to the fore.

Curative Treatment.—When speaking of the cure of leprosy it must, of course, be remembered that in the large majority of cases we mean not cure of the patient, but cessation of the disease, leaving the result, of nerve lesions and mutilations merely *in statu quo*. We believe, however, that in pure macular leprosy a true cure may be effected, and possibly in nodular leprosy some resolution of the disease nodules. It also must be remembered that in the case of pure macular leprosy, spontaneous recovery in very rare cases may occur, while in pure nerve leprosy sometimes no progress of the disease may be observed over a long period of years.

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[1] *Imp. Med. Reports*, 1881, Vol. II, p. 24. Macgowan on Epidemics in Chekiang. Leprosy Epidemics in 1417 and 1589-91.

In connection with the cure of leprosy, pure macular leprosy needs to be considered separately. We believe that in many cases of this form of the disease a real cure can be effected, while in many others any further spread may be indefinitely delayed. From time to time many drugs have been vaunted as cures of leprosy, and we believe they have gained this passing reputation owing to the fact that pure macular leprosy often yields to not a few of these. From our own experience after trying most of these drugs we can only recommend two of them, sodium salicylate and oleum chaulmoogra.

We have used sodium salicylate in many cases of macular leprosy with great satisfaction to our patients and ourselves. We recommend the following routine method. We begin with the following mixture:

Sodii salicylat.	gr. x.
Sodii bicarb.	gr. x.
Aqua menth. pip.	ad ℥ss

Ft. Haustus. Ter die. Mitte ℥viii.

that is, ʒss of sodium salicylate per day. To this draught we add gr.v of sodium salicylate each time the mixture is made up, until the patient is taking ʒiii a day of the salicylate. We do not find it necessary to increase further than this, but keep the dose up for three months, by which time the drug will have effected all the good it is likely to do. We then intermit the medicine, but keep a watchful eye on the patient, and commence the drug again if there is any sign of recurrence. The only trouble we have met with in the use of such large doses of salicylates has been that occasionally it has brought on attacks of vomiting, which we take as a sign to stop the drug entirely for a couple of weeks, after which time we recommence the mixture at half the strength that the patient was taking when the vomiting came on. We believe that the bicarbonate of soda is an important item in the prescription, and prevents to a great extent the onset of toxic symptoms. We also give an Ac. salicylic ointment to rub into the affected area. If cases do not speedily react to Sod. salicylate we try Ol. chaulmoogra. We commence this with ♏ii of the oil on sugar, or mixed with olive oil, twice a day, and increase by ♏i at a time till about ♏xxx is reached. We find, however, that the digestion is rather easily upset by this drug, and not a few cases are unable to take the medicine in anything like large doses. When improvement sets in, it first shows itself by a change in colour in the eruption, which becomes of a less pronounced red, less raised above the surrounding areas, and gradually fades away; the patches, too, regain the power of sweating and their lost sensations.

In anæsthetic leprosy we doubt if any drug is of any service. Further, the progress of the disease is usually so slow that it is impossible to estimate the action of drugs.

Tubercular leprosy in our experience does not yield at all to Sod. salicylate and the use of the drug in these cases is but a waste of time. In a very few cases chaulmoogra oil does seem to influence the disease, the nodules becoming smaller, paler, and less prominent. These cases are but a small minority, but it is the only drug that seems to have any effect. Mercury and potassium iodide are not only useless, but actually harmful. A new treatment has lately been introduced by Professor Deycke, which consists of the hypodermic use of a fatty principle extracted from a leptothrix found in the deeper tissues of the nodule. The preparation is called **nastin.** Our own observations of this treatment are confined to two or three cases, which seemed to be but little benefited. It is only fair, however, to say that excellent results have been reported. The treatment is still only on trial.

Surgical Treatment.—Perforating ulcers should be well scraped, and their edges cut away. Their healing is thus accelerated, but at best they are tedious things to treat. The leper stands surgical operations as well as his unaffected brethren, and partial amputation of affected extremities will sometimes be found of great use in obtaining a serviceable stump in place of a chronically ulcerating member.

> "The effect of fresh air and good food upon the disease is often very marked in arresting the symptoms and showing signs of improvement, at least for a time. Quite a number have been with us for many years, and with one or two of them the disease is no more advanced than it was a few years ago; with others again it is very different, marked advance being noticed within a year." (*Main, Hang-chow.*)

Of the **prognosis** of leprosy in China it is difficult to speak. The pure macular or anæsthetic forms are chronic diseases, and often last for many years. As a minimum in progressive cases of this nature about five years may be given.

The nodular variety is in every way a more serious and acute disease, and many such cases die within two years of the onset of the symptoms.

Kühne, of Tung-kun, gives the following notes of lepers under his own care:

> "Of the thirty-eight adult lepers who died, twenty-six were affected with tubercular or skin leprosy with an average duration of life, after the disease began, of twelve years; while that for the twelve others affected with nerve leprosy was ten years and six months. It is true that some of the nervous cases may live a long time. We have as inmate a man of fifty-four whose disease began when he was a boy of twelve; another, a man of forty-eight, who twenty years ago, then already a leper, was baptised by the Rev. Dietrich and whose disease has made very slow progress. These long-lived exceptions among the nervous cases may have somewhat influenced the statistics, for it can hardly be said that the nervous cases are more resistant to intercurrent diseases than the tubercular ones, the average duration of life for both forms taken together was eleven years and six months.

Exhaustion was the cause of death in	18 cases.
Diarrhoea, dysentery	55 cases.
Cholera	1 case.
Accidental scalding, causing gangrene	2 cases.
Asthma, tubercles in larynx, pneumonia	3 cases.
Dropsy	5 cases.
Exhaustion due to a large ulcer discharging	1 case.
Sepsis	1 case.

BERI-BERI.

(*Syn. Kakke.*)

Beri-beri is a disease which in China has been recognised for many centuries. Macgowan* says that beri-beri, called kioh-ki or chiao-chi, "malarial leg," has been described in a medical treatise attributed to Hwang-ti, B. C. 2697 (?). There is also a monograph on the same subject named in the imperial catalogue between 1100 and 1200 A. D. The two forms of the disease are described with some accuracy. "Malarial leg" is caused by a poison emanating from a moist soil. Besides moisture, errors in diet are named as predisposing causes.

The disease occurs in all latitudes, but is much more common in tropical regions. It would seem in China to be especially a coast disease only encroaching on the hinterlands along the course of the great rivers. It is quite common in Formosa.

Ætiology.—There is probably no known disease, certainly none in the tropical world, about the ætiology of which such fierce discussion rages as about beri-beri. Let us note first the facts about the disease which may be regarded as proven.

1. The disease is **a peripheral neuritis,** and in this resembles the neuritis caused by the toxins of alcohol and diphtheria. *Note:* In

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* *Imp. Customs Med. Reports,* 1881, Vol. II, p. 24.

saying this we do not commit ourselves as to whether the toxin is, like alcohol, produced outside the body and then absorbed; or, like diptheria, produced by the multiplication of the toxin-secreting parasite inside the body.

2. The disease is one **associated with the collection of people together,** whether in gangs, prisons, asylums, schools, or on shipboard.

These two facts are acknowledged by all. The questions now arise: Is the disease one **of place** or one **of food?**

If a disease of food, are we to attribute it to

1. A lack of some essential in the food?

2. A parasitic infection by some ultra-microscopic parasite introduced with the food?

3. An intoxication by a toxin taken with the food?

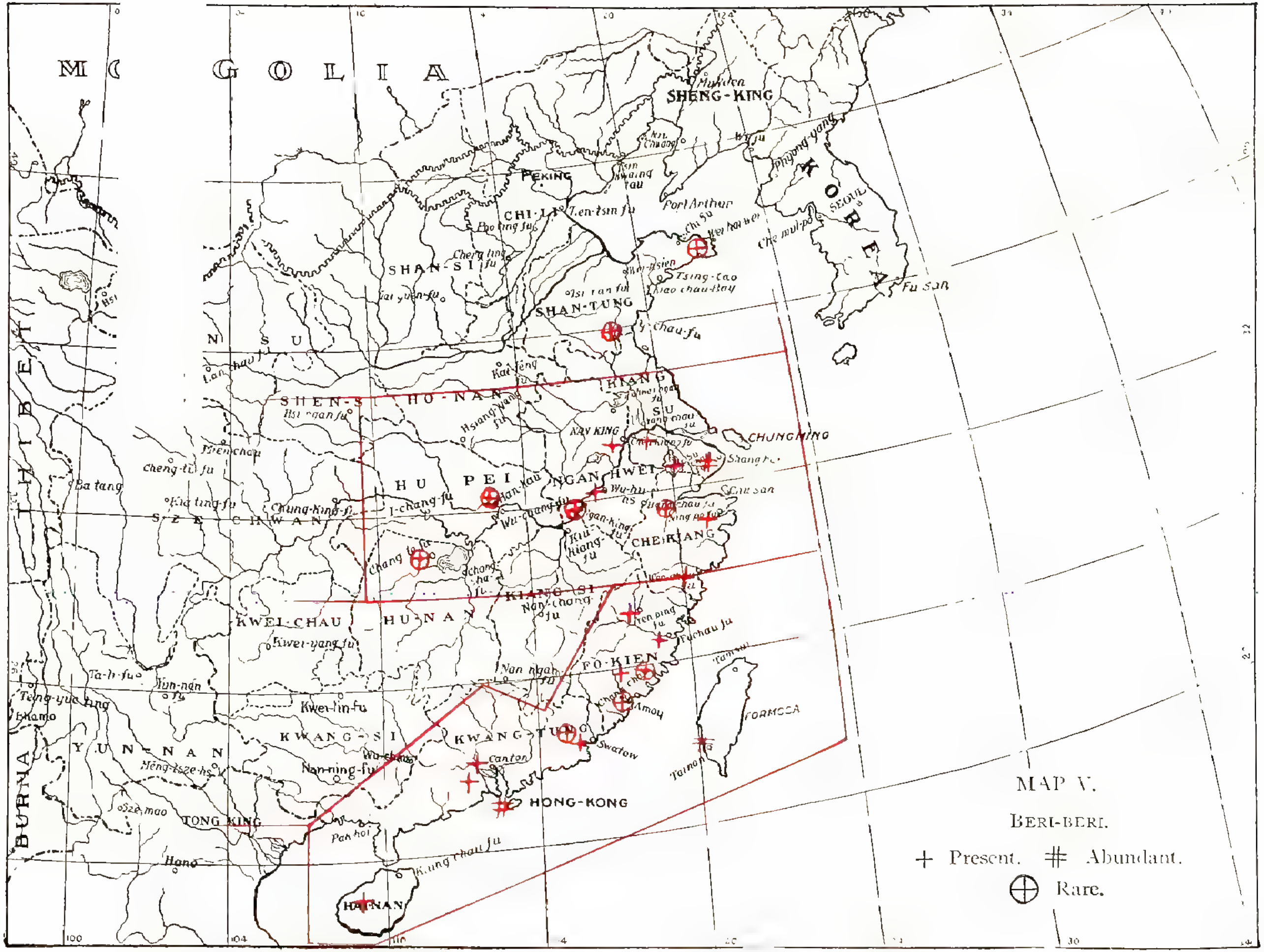
Without committing ourselves to one special theory we shall try to mention the pros and cons in respect to these theories.

In favour of the disease being one of place we have the undoubted fact stated above, that in important epidemics it is always associated with the gathering of numbers in special camps, buildings, or ships, and that the disease may be cured by removing the patient from the place where he has acquired it, though his food remain the same. Against it, we have that without any change of place or of hygienic surroundings there occurs from time to time a complete disappearance of the disease, associated, though not always, with a change of food.

Beri-beri has by some been associated with a **nitrogen starvation.** Few observers now, however, believe that this is the cause.

Where food is incriminated, the article which has received special attention has been rice, and it is over the rice theory that discussion specially rages. Rangoon rice has above all others been attacked.

In favour of the rice theory an enormous amount of very strong evidence has been collected; indeed, so strong that listening to it one feels absolutely convinced of its truth. But these defenders of the rice theory, despite all the evidence in their favour, have failed utterly to rebut other evidence, which to the outside observer makes that theory untenable. This is the asylum beri-beri of non-rice-eating countries, the occurrence of epidemic beri-beri in non-rice-eating regions, such as parts of South America, and the beri-beri found on ships where rice takes no part in the menu, and of which we have convincing testimony from the most skilled experts that the disease is indistinguishable from true beri-beri. Then when we again come to the believers in the rice origin, we have the most striking differences in their theories, each observer supporting his own with indisputable statistics! Take for example: Braddon believes that uncured rice (cured rice being rice parboiled immediately it is har-



MAP V.

BERI-BERI.

vested) is the cause of beri-beri, and brings to bear a number of most striking figures. Unfortunately, he omits the figures where the use of cured rice has not proved a certain preventive of the disease. On the other hand, we have Vorderman's statistics from Java, which would show by equally good figures that beri-beri is due to the consumption of husked rice. those who eat the rice in the husk (and therefore all the toxins) escaping the disease. About these theories, it must be said that the latter failed to stand the test of time, and the former has had, as yet, no opportunity of doing so.

Hamilton Wright has promulgated the theory that the disease is a toxæmia resembling diphtheria, the primary lesion being in the stomach and duodenum, where the germ which he describes as causal generates its toxin and produces a gastro-duodenitis. The source of the infection he believes to be the excreta of beri-beri patients. Experimental post-mortem investigation in Hongkong has failed to bear out this hypothesis.

With all the difficulties, then, that stand in the way of coming to a conclusion, it behooves us at the present moment rather to acknowledge that no theory has been yet promulgated which covers the whole ground, and to determine, therefore, to **keep a perfectly open mind** on the subject.

Race.—Some races are more susceptible than others, though Bradden denies this. This is very clearly brought out in our own experience in Formosa, where the Japanese, who are fewer in number and better fed than the Chinese, fall much more frequent victims to the disease, and acquire it in a more severe form, on the whole, than do the Chinese. It would seem that the races vary in susceptibility, the list being headed by the Japanese, with the European races as the least susceptible.

Age.—Infants and very young children escape as do old people. The disease is one of youth and prime.

Sex has no influence, and our own experience quite bears this out. In the schools under our charge the girls are quite as often affected as the boys. The male sex is, however, much more often placed in the conditions favourable to an outbreak, and therefore appears, though falsely so, to be more liable.

Clinical Picture.—In describing the symptoms of beri-beri it is well to remember that the disease is a peripheral neuritis, and that the symptoms depend on the nerves especially attacked, and the intensity with which they are attacked. If this be remembered there will be no difficulty in understanding how enormously the symptoms may vary in different cases. We propose to divide the disease into three types, but this is only for convenience in clinical description, and does not imply any difference except in the virulence, and in the selective action of the toxins. We shall describe typical cases, fulminating cases, and mild cases. The clinical picture of **a typical case** is very striking.

The patient may be either suffering from anasarca (the œdematous case) or wasting (the atrophic case), but the general symptoms are the same in both.

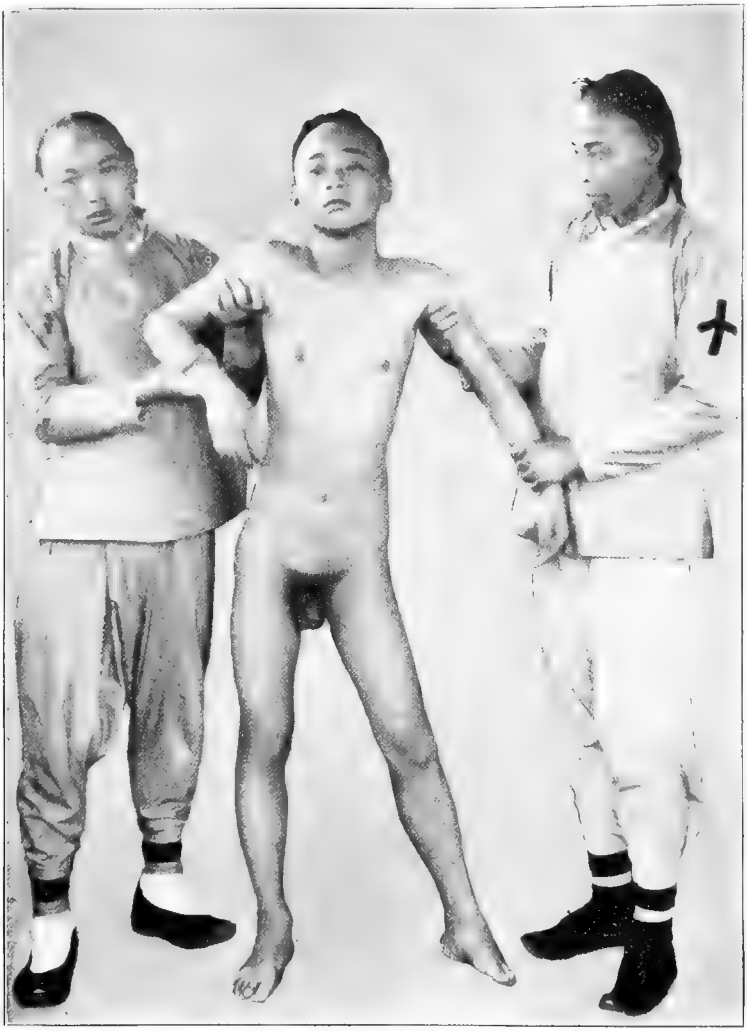


FIG. 28. Early stage of paralysis in dry beri-beri. (*By Jefferys.*)

In regard to the lower extremities: The patient is paraplegic in greater or less degree. A numbness, seldom amounting to true anæsthesia, is complained of up the fronts of the legs, often as far or nearly as far as the waist, and there may be other patches of numbness in different parts of the body. The muscles of the calf are wasted, and very hyperæsthetic, the patient calling out in pain if they are grasped firmly. The knee-jerk is gone. The gait is high-stepping owing to ankle-drop, if the legs are still strong enough to be lifted. These symptoms are always most exaggerated in the lower extremities, but to a less degree apply often to the upper extremities, thus the same tenderness of the muscles of the arms may exist; these may also be wasted, and not unfre-

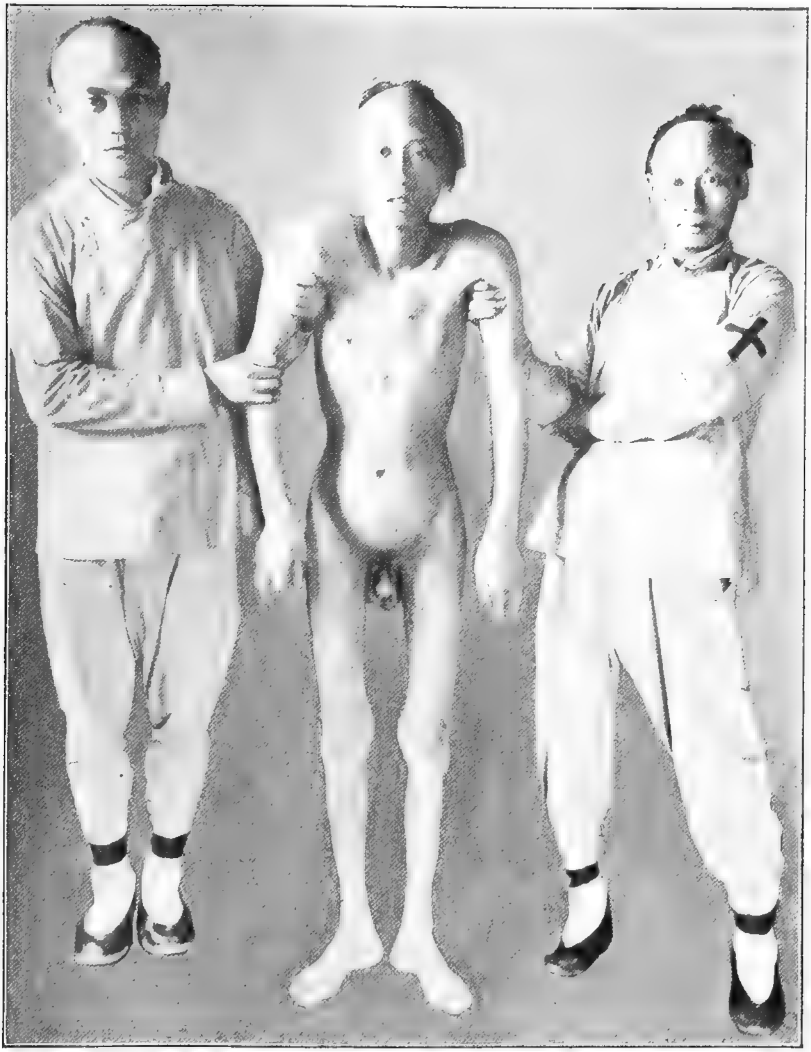


FIG. 29.—Late stage of paralysis with atrophy in dry beri-beri. (*By Jefferys.*)

quently wrist-drop is present. The sphincters are not affected, and the urine is normal.

The most striking symptom of all, however, is **the condition of the heart.** This is in a state of marked dilatation, especially of the right side, loud systolic murmurs may be present, the pulse is soft and compressible and often irregular, rapid and becoming more so on the slightest exertion, which often causes precordial distress. As a natural result the patient is short of breath, and quickly becomes cyanosed. As noted

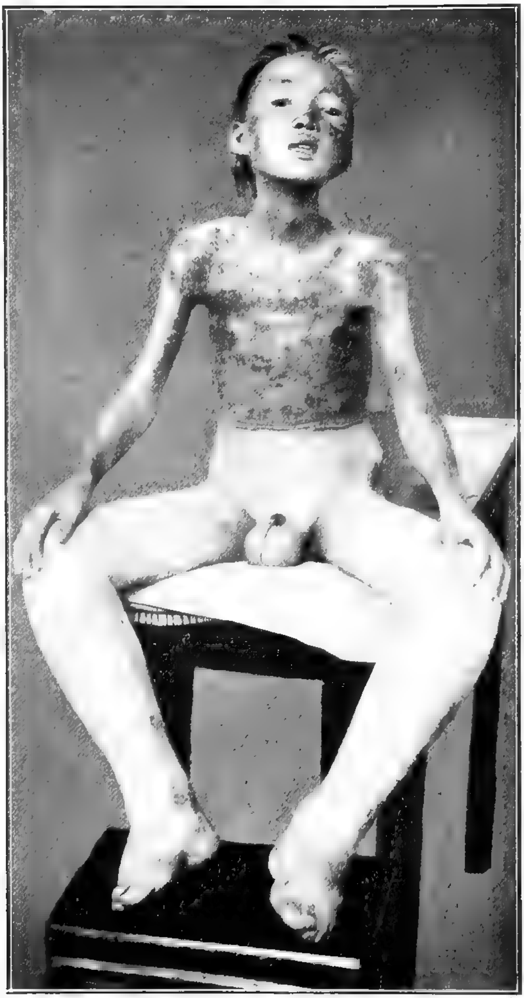


FIG. 30.—Wet beri-beri. General œdema below the waist. Patient shows typical facial expression of air hunger. Taken on admission one week before death from heart failure. (*By Jefferys.*)

before, some cases have great anasarca, and hydrothorax may be present, due to involvement of the vasomotor nerves(?) while others show very clearly the wasting which is present in all cases, and only concealed in the œdematous form. The prognosis of all cases of beri-beri as advanced as this, is uncertain. A large number of them after a prolonged convalescence get perfectly well, the disease leaving no residual paralysis behind. Unfortunately, this is not always the case. Patients with marked heart symptoms are always on the brink of disaster till these heart symptoms clear up, and at any time, in the course of a few hours, may develop an attack of acute and fatal dilatation. Others who recover do so with a permanently dilated heart, and more or less paralysed limbs; they remain chronic invalids and are easily carried off by some intercurrent disease.

Fulminating Cases.—Happily these are rare, but they contribute one of the most striking types of disease that any physician can ever meet. The clinical picture is best given by the description of an actual case. A young man of twenty-seven (all the cases we have seen have been in young men) was brought to the hospital at noon with the following history. He had been in his usual health until two or three days before, since when he had been complaining of some discomfort, attributed to indigestion, in the pit of his stomach. That morning he had been seized with pain in his chest and great shortness of breath. He appeared a strong healthy man, with an expression of great distress on his face, gasping for breath, with intense precordial pain, and very marked cyanosis. On examination he was found to have great dilatation of the heart, the viscus pulsating wildly, with absolute irregularity of rhythm, the pulse soft and very compressible, uncountable because of rapidity and irregularity. The temperature was sub-normal. The patient was put to bed, well propped up, but no drug seemed to have any effect on his condition, though bleeding relieved him to some extent temporarily. He died a few hours later. In such cases it would seem that the poison of a very virulent nature has a **selective action for the vagus,** and death ensues before there is time for any other nerves to be involved.

Mild Cases.—At the opposite pole from those described above we have cases of extreme mildness in which the diagnosis may be very difficult. Such patients puzzle the physician on his first arrival in the tropics. They are found especially in schools under medical supervision, where the attention of the doctor is called to them before any typical cases have developed. They are diagnosed without great difficulty once the physician has had his attention drawn to them, but will probably only be recognised at first when associated with others more acute. These patients exhibit only one or perhaps two of the cardinal symptoms. Most commonly they complain only of some numbness of the legs, often associated with indigestion and frequently with constipation. On examination it is found that there is numbness, not true anæsthesia, up the front of the legs to perhaps the middle of the thigh, sometimes higher.

There is slight pre-tibial œdema, and in many cases nothing more. The knee-jerk may be present; in a certain number of cases it is absent. We wish to specially emphasize the fact that in not a few of the cases the knee-jerk is present, and apparently unimpaired; because, though many text-books seem to regard the absence of knee-jerks as an essential symptom in beri-beri, this is certainly not true in early cases. In other patients, associated with the numbness and pre-tibial œdema, is a certain amount of tachycardia brought on by excitement, or exertion, and some shortness of breath on exercise, such as mounting stairs. The majority of such patients respond at once to medical treatment, but occasionally the symptoms seem to be progressive and require more energetic measures.

Diagnosis.—Typical cases of beri-beri present no difficulty whatever in diagnosis. The association of anæsthesia, pre-tibial œdema, tenderness of muscles, ataxia, and irritable heart make the disease absolutely unmistakable.

Fulminating cases, once seen, leave an indelible imprint on the physician's memory.

The only difficulty we have is over mild atypical cases. Here we rely on the numbness and slight pre-tibial œdema, with absence of albumin in the urine, and with the certain presence in one or more, if a number are affected, of irritable heart.

Treatment.—In fulminating cases treatment is almost hopeless. Blood-letting has seemed to us to relieve the symptoms better than anything else; drugs such as digitalis have proved of no use whatever in our hands, nor has nitrate of amyl.

In mild cases a tonic of quinine, iron, and strychnine has proved very serviceable, careful attention being paid to the bowels. In cases slightly more advanced with markedly irritable heart, or mild cases which are progressive despite treatment, the patient should be sent away from the institution to home or friends in the country. The symptoms will be at once mitigated and recovery will be rapid, unless ataxia has commenced, when the convalescence, equally certain, may be prolonged. We have never lost a case sent to an open-air life in the country at a reasonably early period of the disease, or seen anything but eventual recovery. Where a large number of cases are attacked in one school it is well to close the school temporarily.

It should be noted here that many of **the mission schools** are built with little or no regard to the most elementary laws of sanitary science. Overcrowding is the rule rather than the exception. Six hundred cubic feet of air space per pupil should be regarded as the minimum allowance in all dormitories and sleeping apartments.

In typical cases of fairly advanced disease we still advocate change of place, if possible, for the patient, but it must be remembered that cases of sudden heart failure are common, and the strain of a removal may prove too much for an already dilated heart. Rest in bed is for all such patients absolutely essential. A full diet of easily digested food, but without a great deal of rice is the best. With regard to drug treatment, we give a good saline aperient at first; if not contraindicated a free saline purge, especially in œdematous cases. Cardiac tonics are indicated, but in small frequently repeated doses, say ♏ii of the tincture of digitalis every four hours. In acute cardiac attacks amyl nitrate is said to be of service; our own experience hardly bears this out, but blood-letting is certainly a relief. Atrophied muscles should be treated by massage, and a tonic of iron and strychnine continued till convalescence is well established.

Boone (Shanghai) substitutes a diet of beans in place of rice.

The following table of cases observed in the Shanghai prison is of interest.

General incidence of beri-beri among municipal prisoners, Shanghai, 1898-1901.

Total municipal prisoners	50,000
Prisoners with sentence of one month and over (these prisoners supplied all the cases of beri-beri)	3,430
Cases of beri beri	480
Incidence of beri-beri on all prisoners	1 per cent.
Incidence of beri-beri on long-sentence prisoners (*i.e.*, with sentences of one month and upward)	14 per cent.
Deaths from beri-beri	98
Case fatality	20 per cent

CHAPTER V.

DISEASES CAUSED BY PROTOZOAL ORGANISMS.

Malaria, Blackwater Fever, Kala-azar, Relapsing Fever, Yaws.

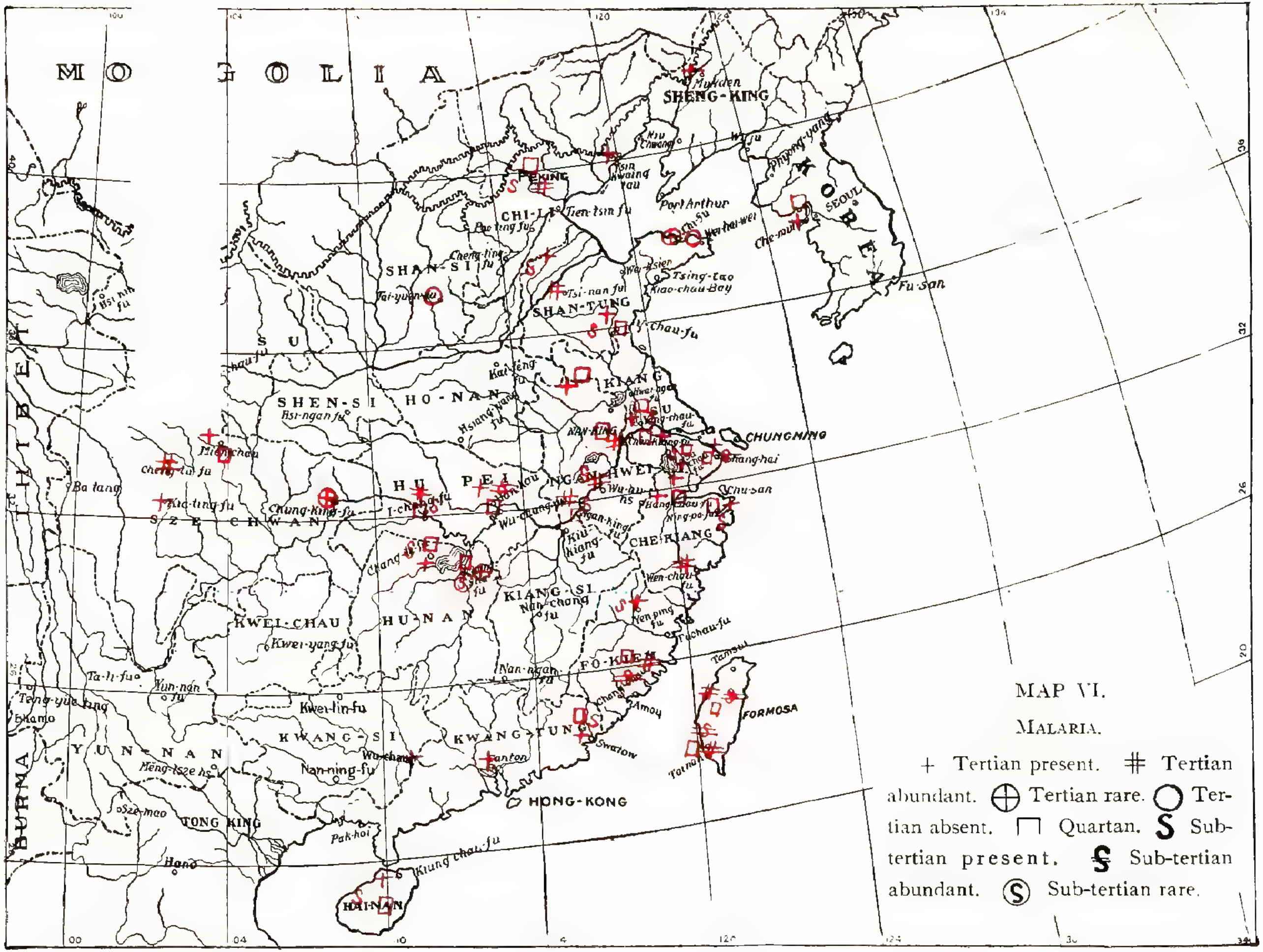
MALARIA.

Malaria is a subject the literature of which might now fill libraries; it is preëminently the disease in which patient scientific research has been rewarded by such an exact knowledge of ætiology, prophylaxis, course, and treatment as we possess of few other ailments. So completely has malaria been dealt with in every text-book of tropical medicine that we should have felt inclined to omit it from a work of this nature, were it not for the fact that malaria still remains the commonest of all diseases in China and the most serious cause of invalidism among Europeans in the East. We consider that this latter fact is little short of a scandal, and we are sorry to have to acknowledge that of all the foreigners in China, the missionary body is most to blame for this state of things. That this is through ignorance we gladly allow, but there is a time when ignorance becomes culpable, and we are already long past that time.

While malaria usually occurs as an endemic disease, it from time to times assumes an epidemic form, and as such may ravage a whole district. Where this occurs it is probably always associated with the presence of the subtertian parasite.

One of these epidemics is described by Logan, of Chang-teh, in the following words:

> "During the last year we have had an epidemic of malignant malaria in our vicinity. I say 'epidemic' advisedly, for I have carefully watched with the microscope since 1901 for the malignant organism and its attendant symptoms in patients. Just when I had concluded that this region was free from the disease, we were, in 1906 visited with a veritable epidemic. Benign tertian and quartan we have as endemic diseases, but strange to say seldom see quartan now, whereas in 1901 to 1903 90 per cent. of malaria was of the quartan variety. I think a partial explanation of the epidemic is that in 1905 a region of Hu-peh and Hu-nan, north of here, was visited by floods, by which thousands were driven from their homes. The country there is very malarious, and it is probable that a sufficient number of refugees came to our region with malignant gametes in their blood, thus infecting our anopheles, and I doubt not that we shall have plenty of malignant malaria from this time on."



MAP VI.

MALARIA.

+ Tertian present. # Tertian abundant. ⊕ Tertian rare. ○ Tertian absent. ⊓ Quartan. S Sub-tertian present. $ Sub-tertian abundant. Ⓢ Sub-tertian rare.

Ætiology.—The cause of malaria is the presence in the blood of an animal parasite, the *Plasmodium malariæ*. The parasite is carried to the patient by a mosquito of the *Anopheles* type. We shall not here enter into the proofs of this statement. They have been so often and so clearly set forth that any who remain ignorant or sceptical, can only be wilfully so. There are few theories in medicine of which we have so many indubitable proofs as we have of the mosquito conveyance of malaria. Lest it should be said that such proofs all relate to lands outside our immediate ken, we append here the figures showing the results of mosquito protection of the soldiers of the Japanese garrison in Formosa.

Percentage of deaths of Japanese soldiers in Formosa from malaria, 1897–1900, before any of the barracks were mosquito-screened, 17 to 20 per cent; 1901, when screening was only in very partial use, 11.19 per cent.; 1902, 7.32 per cent.; 1903, screening thoroughly effected, 0.7 per cent.

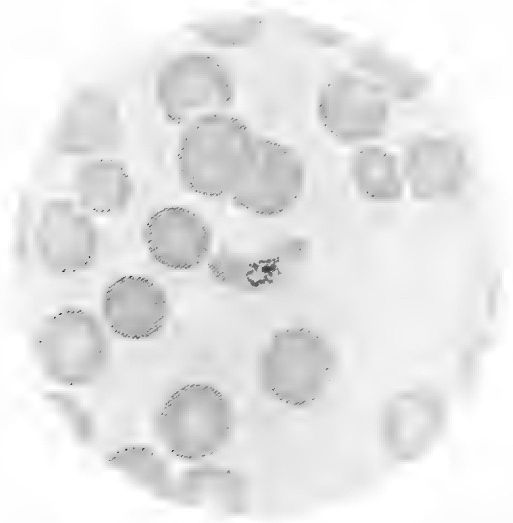


FIG. 31.—Crescent parasite. (*By E. Sutton, H. M. S. Magnificent.*)

The *plasmodium malariæ*, like many other protozoal organisms, has a double cycle of existence—the asexual cycle, completed in man which allows of the multiplication of the parasite in the blood, and the sexual cycle which takes place in the body of the mosquito.

Three forms of the parasite are commonly described:

The quartan parasite (*plasmodium malariæ*), corresponding to quartan ague.

The tertian parasite (*plasmodium vivax*), corresponding to tertian ague.

The subtertian (malignant tertian) (*plasmodium præcox*), corresponding to pernicious malaria.

The differences between the parasites, though slight, are clearly defined and are well shown in the Plates II, III, and IV.

Symptoms.—The classical symptom of malaria is the rigor or ague fit. In its typical form it consists of three parts: the cold stage, the hot stage, the sweating stage. Before the actual attack commences there are often some prodromal signs: lassitude, pains in the back and limbs, and inclination to yawn; but usually in an hour or two the typical symptoms commence. These begin with a sense of intense cold, the patient shivers, his teeth chatter, and his features are blue and pinched; despite this feeling of cold, however, the temperature is already high. The duration of this stage is about one hour; in children a convulsion may occur. The feeling of cold is now replaced by one of heat, not a pleasant heat, but a dry febrile distress, accompanied by intense headache, the skin being hot and dry and the pulse rapid. The temperature, still rising, reaches 105° to 106° F. or higher. Vomiting is common both in this and the cold stage. The duration of the hot stage is from one to three hours. The close of his period is marked by very profuse sweating; the headache, the vomiting, and the discomfort of the hot stage disappear, the temperature falls to normal, and the patient is able to resume his ordinary occupation. The duration of this stage is from two to three hours.

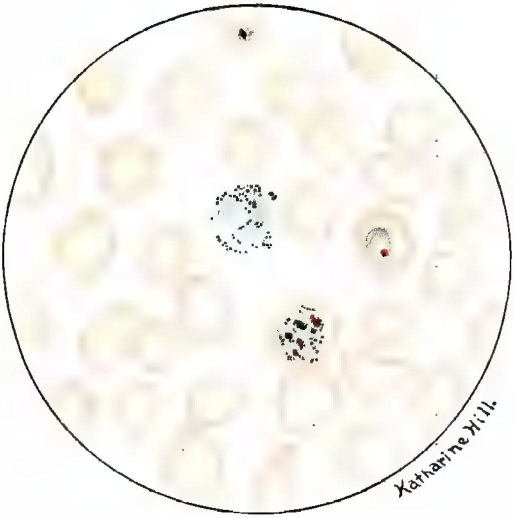
During the pyrexial attack the spleen is enlarged, but this enlargement disappears with the return of the temperature to normal. While the above description applies to a typical malarial attack, it is quite common to meet with slight attacks where the rigor is replaced by a periodic headache, attack of neuralgia, vomiting, etc.

Ague is called "tertian" or "quartan" according as the periodically recurrent ague attack occurs on the third or on the fourth day.

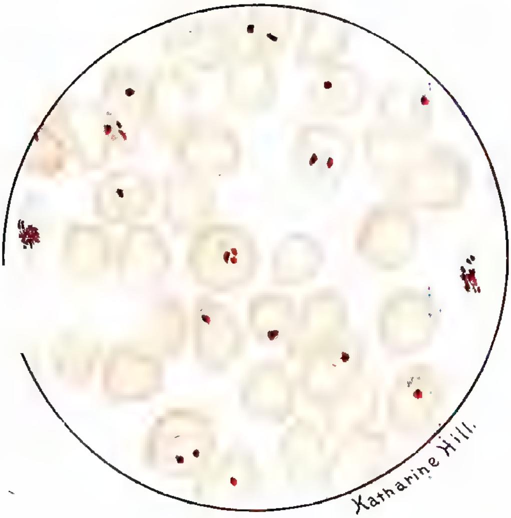
A. Day of month.	*1	2	*3	4	*5	6	*7	8	*9	10	*11	12
B. Day of month.	*1	2	3	*4	5	6	*7	8	9	*10	11	12
C. Day of month.	*1	†2	*3	†4	*5	†6	*7	†8	*9	†10	*11	†12
D. Day of month.	*1	†2	3	*4	†5	6	*7	†8	9	*10	†11	12
E. Day of month.	*1	†2	‡3	*4	†5	‡6	*7	†8	‡9	*10	†11	‡12

A. Tertian ague. B. Quartan ague. C. Double tertian—quotidian ague. D. Double quartan. E. Triple quartan-quotidian.

* Dates of rigors from first infection. † Dates of rigors from second infection.
‡ Dates of rigors from third infection.



TERTIAN MALARIAL PARASITE. (WRIGHT'S STAIN.)
(*From Webster's Diagnostic Methods.*)



ESTIVO-AUTUMNAL PARASITE. (WRIGHT'S STAIN.)
(*From Webster's Diagnostic Methods.*)

The cause of the periodicity is explained in the diagrams dealing with the growth of the parasite.

The typical ague fit is the characteristic of the tertian and quartan varieties of the fever, and the disease consists simply in these attacks following each other at regular intervals of time. There is, however, a third form known as malignant tertian, or subtertian fever.

The disease in the subtertian form differs from the other two mentioned above as regards the temperature chart, complications, and sequelæ. The tertian periodicity can be recognised in the malignant tertian, as in the benign tertian form, but is much less pronounced in the former, while in the intervals between the exacerbations the temperature does not fall to normal. Further, the rigors or ague fits so typical of the benign form are slight or absent in the malignant fever.

The complications met with in this type of fever are easily explained on reference to the life history of the parasite. Only the earlier stages of the life history occur in the peripheral blood stream. For some reason these parasites in their later stages become adherent to the walls of the capillaries of the internal viscera, and if occurring in very large numbers may block the capillaries in these regions. The action, therefore, of the parasite in this manner is purely mechanical, and its most serious effects are produced when the blocked capillaries are in the brain.

It is in these cases that convulsions in children and rapid coma in adults are so common and frequently quickly fatal. Should, however, the patient survive or if the block occurs in a less important viscus than the brain, recovery is rapid and complete, as with the sporulation of the parasites they lose their adhesiveness and once more enter the general circulation, leaving the blood again free to pass through its accustomed channels. Perhaps the most serious sequel to these attacks of subtertian fever is the profound anæmia that so often follows it. This is much more pronounced than after the benign fever. The reason for this is that more red blood-cells are, as a rule, attacked by the parasite in the subtertian fever, and double and triple infections of a single blood-cell are quite common.

Speaking now generally of all forms of malaria, but remembering that whatever applies to the benign applies even more strongly to the malignant form, we must consider the commonest sequelæ of malarial fever.

Nephritis is often given as a common sequel to untreated malarial fever; but we are by no means clear on the question of the accuracy of this statement. That albuminuria is not rare is certainly correct, and the quantity of albumin passed may be very large. But in our own experience casts are few and often quite absent, and the albumin clears up completely when the malaria is properly treated, and never goes on to chronic nephritis. We doubt, therefore, the accuracy of the term "nephritis" as applied to these cases. Accompanying any attack of malaria there is always some enlargement of the spleen; such enlargement, however, is purely transitory and disappears with the cessation of the attacks of ague; it is probably due merely to passive congestion and to hæmolysis. When, however, the attacks of malaria follow one another in rapid succession some permanent enlargement of the viscus is always the result, while in very malarious districts a large proportion of the inhabitants often suffer from enormously enlarged spleens. The size to which a spleen may grow under these circumstances is almost incredible, spleens reaching to the right iliac crest are far from rare, and we had one woman in hospital with the viscus so enlarged that the only area in the abdomen resonant to percussion was a very small one in the extreme right loin.

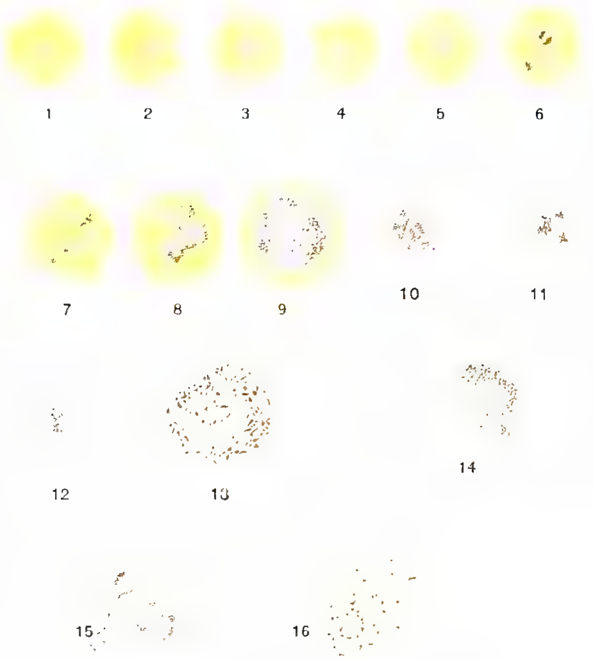
Often accompanying this enlargement of the spleen is what is known as **malarial cachexia.** The skin in this condition becomes of a peculiarly earthy appearance, dry and rough; the eyes slightly jaundiced and the frame wasted. Such patients are liable to attacks of irregular fever on slight provocation, such as fatigue, injury, exposure to the sun, etc. The blood presents a picture closely resembling that of pernicious anæmia; and epistaxis and other hemorrhages are common. In children development is greatly delayed, with the result that such children show stunted growth, immature genitals, female type of voice, etc.

It must not, however, be too readily taken for granted that all cases conforming to this type of malarial cachexia are necessarily due to the fevers with which we are dealing. For ourselves we feel strongly that malaria is only one of possibly a group of palludial diseases, the sequelæ of which are all covered under the term malarial cachexia. We quote in illustration of this that Roys, Wei-hsien, Shantung, finds a history of malarial fever in only 3 per cent. of the cases of enlarged spleen in that region in which a clear previous history could be obtained.[1]

Apart from cachexia, the commonest sequel of malaria is neuritis in some form or other. Peripheral neuritis in a mild form is very common among the natives of regions where malaria is found, and attacks especially the arms and hands. Its pathology is obscure and it reacts slowly if at all to quinine. We are, however, convinced that it is of malarial origin. Neuralgias also of various sites are not rarely the result of chronic malaria.

Diagnosis.—The diagnosis of a straightforward case of tertian or quartan ague is quite simple, the temperature chart alone is pathogno-

[1] *China Medical Journal*, January, 1908.



THE TERTIAN PARASITE.

(From Da Costa's "Clinical Hematology.")

1. *Normal erythrocyte.*
2, 3, 4, 5. *Intracellular hyaline forms.*
6, 7. *Young pigmented intracellular forms* In 6 two distinct parasites inhabit the erythrocyte, the larger one being actively ameboid, as evidenced by the long tentacular process trailing from the main body of the organism. This ameboid tendency is still better illustrated in 7, by the ribbon-like design formed by the parasite. Note the delicacy of the pigment granules, and their tendency toward peripheral arrangement in 6, 7, and 8.
[illegible] 7. In 7, 8, and 9 enlargement and pallor of the infected [illegible] conspicuous.
[illegible] *d parasite.*
[illegible] 10 is shown the early stage of sporulation—the develop[illegible] and peripheral indentations coincidentally with the swarming of the pigment toward the center of the parasite. The completion of this process is illustrated by 11 and 12.
13. *Large swollen extracellular form.* Note the coarse fused blocks of pigment. (Compare size with that of normal erythrocyte, 1.)
14. *Flagellate form.*
15 *Shrunken and fragmenting extracellular forms.*
16. *Vacuolation of an extracellular form.*

NOTE.—The original water-color drawings were made from fresh blood specimens, a Leitz $\frac{1}{12}$-inch oil-immersion objective and 4 ocular, with a Zeiss camera-lucida, being used.

(E. F. FABER, *fec.*)

monic; difficulties begin to arise when we have to deal with quotidian and subtertian fevers. The points on which we rely for diagnosis are: the temperature chart, the blood examination, and the action of quinine.

Temperature.—All forms of malaria show a periodic rise in temperature, a chart which shows no periodicity is not a chart of malaria.

It must be remembered, however, that many other diseases show a periodic rise of temperature usually of a quotidian form. This is particularly the case with all septic conditions, whether purely such or mixed septic and tubercle infections. The peculiarity, however, of all septic infections is that the periodic rise of temperature is most common during the evening hours, whereas in malaria the tendency is for the rise to occur after midnight or during the morning hours. Further, the rise in other cases than malaria is much more likely to vary in its exact time of occurrence.

Blood Examination.—In unstained or properly stained films of untreated malaria the plasmodium is easily seen on microscopic examination. Unfortunately, a few doses of quinine, hardly enough to check the fever, yet suffice to drive all, or nearly all, the parasites out of the peripheral circulation. Much help, however, may still be derived from a blood examination. Direct evidence may in many cases be obtained by observing masses of pigment still in the peripheral blood, or in the bodies of polymorphonuclear leucocytes; these masses of pigment being the remains of dead pigment-bearing parasites. Indirect evidence may be obtained from a differential leucocyte count. As a rule, there is rather a leucopenia than a leucocytosis in malaria, but there is a relative and often an absolute increase in the number of mononuclear cells, especially the large lymphocytes. This lymphocytosis is not, however, confined to malaria, but occurs in other diseases caused by protozoal organisms, such as kala-azar, trypanosomiasis, etc. The evidence obtained by the leucocyte count must, therefore, be used only with care. In cases, however, of subtertian fever the exhibition of quinine does not immediately affect the presence of the crescents, and in this type of disease these characteristic bodies may still be observed, though it must be remembered that they seldom occur in the blood in any very large numbers.

The Action of Quinine.—Quinine is a specific for all forms of malaria if given in the right manner; what manner this should be we deal with at length under the heading of treatment. If quinine be given correctly and in suitable doses it always acts on malaria, and if after three or four days no effect whatever has been produced by the proper use of the drug, the disease is almost certainly not malaria.

Prophylactic Treatment.—Remembering that the only proven method of conveyance of the plasmodium is by the mosquito, there are evidently three ways of escaping malaria: destruction of the mosquito, protection of the person from mosquito bites, rendering of the blood an unsuitable medium for the development of the parasite.

Destruction of the mosquito is arrived at by the proper drainage of the ground to remove surface water, by banking of rivers, and by the covering of all undrainable pools of water with a fine film of oil, thus preventing the larvæ from obtaining air. All these methods act by destroying the breeding-grounds of the mosquito. It is evident that in China little can be done by these methods at present. On the one hand, over a large part of China rice cultivation by the wet method is carried on in the country and up to, and even inside the city walls. (See Chapter II, p. 48). On the other hand, even where rice is not grown, much of the ground is watered by artificial irrigation methods, and these irrigation channels will always give plenty of opportunities to mosquitoes for breeding. Some good, however, may be done by the prevention of the accumulations of water in the immediate vicinity of dwellings. We must, therefore, dismiss this prophylactic measure as being seldom at present in China of any applicability, and then only in isolated and exceptional places.

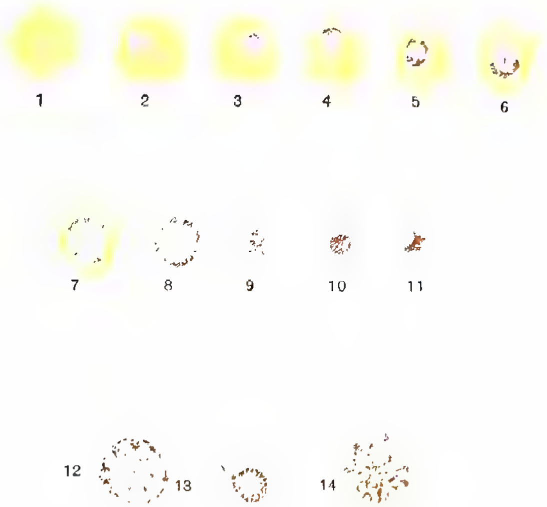
It is to the second measure, the **protection of the person** from the bites of infected mosquitoes, that we must look as our main line of defence. How is this to be effected? The separation of European from Chinese dwelling-houses is seldom practicable and still less often desirable. Mosquito nets around beds are of some value, if properly used, which they seldom are, but have the further objection that they are the commonest cause of the spread of tuberculosis among the natives of South China.

The only effective way is the protection of the whole house by the provision of wire-gauze screens over all doors, windows, etc. This is a matter of some expense, but for Europeans at least means a far smaller outlay than that caused by chronic invalidism or by a premature return to the home country. We believe, therefore, that where malaria is a frequent cause of illness nothing excuses the non-adoption of a simple and effective method of this kind. The same applies to schools and hospitals in a malarial region where the additional advantage is obtained that in a few years' time the wire gauze repays itself in the saving in cost of mosquito nets.

We cannot in the space at our command enter into more than the principal points in the **mosquito proofing of houses.** These resolve themselves into: the gauze to be employed; the screening of verandahs and windows; the screening of doors.

The gauze to be employed. It is of the greatest importance in order to avoid constant disappointment that the correct material should be used at the outset. It is possible to obtain material which excludes light

PLATE III.



THE QUARTAN PARASITE.

(From Da Costa's "Clinical Hematology")

[illegible] form. Note the coarseness, dark color, and scantiness

[illegible] ges of 3. Note the peripheral distribution of the pigment in all the parasites from 3 to 8. (Compare size and color of the erythrocytes in 5, 6, and 7 with 7, 8, and 9, Plate I.)

8. *Mature intracellular form.* Note that the stroma of the erythrocyte is no longer demonstrable.

9, 10, 11. *Segmenting forms.* In 9 are shown the characteristic radiating lines of pigment. (Compare with 10, 11, and 12, Plate I, and with 10, 11, and 12, Plate III.)

12. *Large swollen extracellular form.* (Compare with 13, Plate I.)

13. *Flagellate form.* (Compare with 14, Plate I.)

14. *Vacuolation of an extracellular form.*

(E. F. FABER, *fec.*)

and which rusts in a year or two. We strongly recommend a good galvanised wire gauze for all inside work and where not much exposed to the weather, and a brass gauze for outside screens in exposed places. With regard to the size of the gauze, we have ourselves for several years used a twelve-mesh-to-the-inch gauze, and find it eminently satisfactory; others, however, prefer a gauze with sixteen meshes to the inch. A very good galvanised material can be obtained from Montgomery, Ward & Co., of Chicago, under the name of "bright wire cloth" at about five cents (Mex) per square foot, and a good brass wire gauze from V. & R. Blakemore, Birmingham, at about eleven cents (Mex) per square foot.

Screening of verandahs and windows. Wherever possible the whole verandah should be screened, as this saves a good deal of otherwise necessary work over windows, doors, etc. On the side of the house where there are not verandahs, of course each window must be dealt with separately. It will frequently be necessary in this case to have three sets of windows. An internal set of glass windows, an external set of venetian shutters, and the gauze screens between. In this case, in order to reach the venetian shutters for opening and closing them, it will be necessary to have the gauze windows movable. We have ourselves found the following plan for such windows simple and effective.

The window is divided into two halves, an upper and outer half which is nailed immovable, and a lower and inner half which can push up. The lower half, when pushed right up, is held in that position by a spring which flies out on each side and prevents the window falling again. To let down the window one finger of each hand pushes the spring back, and the window falls into position. A rough sketch, Fig. 32, is here given showing the lower frame raised. The arrows show where the fingers must push to collapse the springs and allow the window to fall.

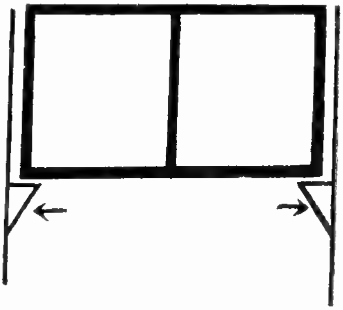


FIG. 32. Method for window screens

The screening of doors. It is quite essential that doors and passages to the outside and in frequent use should be doubly screened. By this we mean, first, a mosquito door, then a short porch, and then another mosquito door. If only one door is used it is quite impossible to prevent a few mosquitoes entering when people go out and in. The only exception to this rule should be the servants' entrances to the bath-rooms. Here a single door will suffice if, and this is most essential, all carrying of water be done during the morning hours. If hot water for baths has constantly to be carried at night, these doors, too, must be doubly guarded. The doors should be kept in position by double-swing spring hinges for preference. Our own experience of these, however, has not been very satisfactory. They are expensive and very easily snap. Failing these, nothing beats a simple iron coil spring for pulling the door to. The coil should be long, not very powerful and, to avoid slamming, fixed in such a position that it is put as little on the stretch as is consistent with closing the door: such coil springs are very cheap.

In places where mosquitoes are absent for many months in the winter season the screening of the whole house is unnecessary, and the desired end may be reached by the use of what are known as "mosquito houses." Collapsible frames are made covered with mosquito gauze, and when the mosquito season arrives these are put together so as to form a second little room inside the main room or on the verandah, in which may be placed a desk, a reading table, a few chairs and so forth. A similar "house" should be used in the bedroom surrounding bed, chairs, etc.

Prophylactic Use of Quinine.—Where the mosquito screening of houses is impossible and when travelling in the country we must fall back on this our third line of defence against malaria. It is not as effective as the second, but if thoroughly and systematically carried out is nearly so. Various ways are advised for the prophylactic use of quinine, but they resolve themselves into two main plans:

(1) The administration of grs. v of quinine every morning before breakfast. We successfully used this plan ourselves for two years until we were able to get our own house mosquito-proofed.

(2) Grs. xv of quinine taken every tenth day. We know others who use this method with equal success.

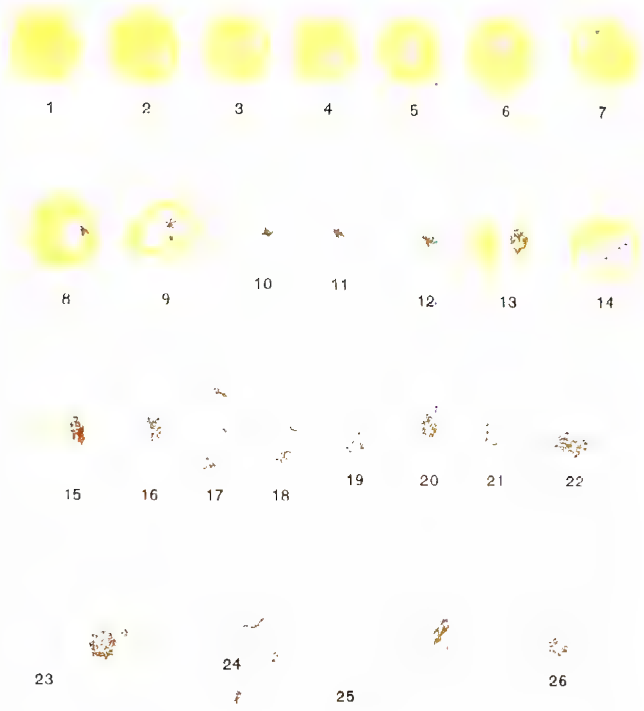
Main, of Hangchow, says:

> "Malarial fever in every form is very common. Of all the diseases in China none is of more importance. Many are killed by it and its sequelæ every year. Quinine is a perfect prophylactic, and those who take from 10 to 20 grains a week during the malarial season do not know what malarial fever is."

Medicinal Treatment.—As we have already indicated, quinine is the only drug on which we can rely in malaria, but to be effective it must be used in a rational manner. We will give first some examples of quinine being administered in a wholly irrational manner. All Europeans in a malarial region now take quinine; but to many of them this only means the taking of a single dose, often of enormous size, when the fancy takes them or when they feel chilled or unwell from any cause. Often, too, the quinine is taken in an insoluble form.

Quinine taken in this way is not only useless, but actually harmful:

PLATE IV.



THE ESTIVO-AUTUMNAL PARASITE.

(From Da Costa's "Clinical Hematology.")

1. *Normal erythrocyte.*
2, 3. *Young hyaline ring-forms.*
4, 5, 6. *Intracellular hyaline forms.* In 4 the parasite appears as an irregularly shaped disc
[illegible] area. In 5 and 6 its ameboid properties are obvious.
[illegible] *form.* Note the extreme delicacy and small number of
[illegible] compare with 6, Plate I, and with 3, Plate II.)
[illegible] *of 7.*

13, 14. *Crescentic forms at early stages of their development.*
15, 16, 17, 18, 19. *Crescentic forms.* In 15 and 19 a distinct "bib" of the erythrocyte is visible.
Vacuolation of a crescent is shown in 18, and polar arrangement of the pigment in 17
20. *Oval form.*
21, 22. *Spherical forms.*
23. *Flagellate form.*
24. *Vacuolation and deformity of a spherical form.*
25. *Vacuolated leucocyte apparently enclosing a dwarfed and shrunken crescent.*
26. *Remains of a shrunken spherical form.*

(E. F. FABER, *fec.*)

it does not affect the parasites, at least more than to expel them from the peripheral circulation, it gives the patient a false sense of security, and, where that disease is prevalent, it renders the patient more liable to an attack of blackwater fever. Further, it upsets the stomach, affects the hearing, and produces headache. This method of taking quinine is wholly to be condemned. Another common error in the taking of quinine is associated with the use of quinine tabloids and pills. The use of tabloids or good quinine pills as a prophylactic against fever and in mild cases of the disease is excellent; but when the stomach is already upset and its functions seriously deranged, quinine in this form simply fails to be absorbed and often passes through the whole length of the alimentary canal, and is finally discharged in the stool in the shape in which it was originally administered. Still another irrational way of giving quinine is to administer it by the mouth when the patient is constantly vomiting. This would appear to be self-evident, but we have often seen quinine given to such patients and the friends wondering why it had failed to influence the fever. Lastly, it cannot be too strongly insisted on that quinine fails to act, or at least to act efficiently, when the patient is suffering from constipation. Again and again we have had patients sent to us who had otherwise been efficiently treated with quinine, but in whom the treatment had failed to control the fever, and have found that the patient was obstinately constipated. All that he required was a good dose of Epsom salts in association with the quinine to render the latter immediately efficient.

The medicinal treatment of malarial fever may briefly be given as follows: for attacks of benign tertian and quartan and for mild attacks of subtertian fever a mixture of quinine in solution with, unless the bowels are acting quite freely, a dose of Epsom salts. It is quite a mistake to suppose that the amount of quinine need be large; we have found after a very large number of observations that in nearly all cases of fever grs. iiss of quinine three times a day is ample. Our own routine treatment for the malarial attack is the following mixture:

℞—Quinine Sulph.,	grs. iiss
Ac. Sulph. Dil.,	♏iii
Magnes. Sulph.,	ʒi
Aquæ ad.,	℥ss

Of this mixture we give ℥i = grs. v of quinine at once, and order the patient to take ℥ss three times a day. Of course the sulphate of magnesia is omitted if the bowels are already freely open. The mixture is continued for a week or ten days after all symptoms of the fever have disappeared.

In cases of a more severe type, especially of the subtertian variety or where vomiting is constant, a more energetic method is required and the hypodermic use of quinine is indicated. But the relative number of these cases in China is very small. Three points of importance in the **hypodermic use of quinine** must be dealt with: the salt to be used; the site of injection; the technic.

The salt should be an easily soluble salt of quinine and should be dissolved in a sufficient quantity of water to render the solution not too acid. It must not be forgotten that a strong solution of an acid salt of quinine will produce a local necrosis of any tissue into which it is injected, and this will be followed by an abscess, quite apart from any septic infection. We prefer the bihydrochloride of quinine, the most soluble salt there is on the market, very freely diluted. Grs. v of this salt in ℳlx or more of water makes an excellent solution for hypodermic use.

The **site of injection** is also of considerable importance. The injection should not be merely subcutaneous, which is usually very painful and liable to infection by skin germs, but intramuscular. By far the best site of injection is the gluteal region, the needle being plunged deeply into the gluteal muscles, care being taken to avoid the large vessels and nerves. In this way merely a transient feeling of soreness is induced, and alternate buttocks may be used on alternate days, over a very considerable period.

The Technic.—Great care should be taken that the solution is aseptic. The syringe, preferably all glass, should be cleansed by boiling, and the skin at the point of injection should as far as possible be rendered surgically clean.

In cases of cerebral attacks of malaria quinine in much diluted solution may be given intravenously; others recommend the rectal route in such cases; the dose by this route should not be less than grs. xxx in well diluted solution.

Many **other drugs** have from time to time been vaunted as specifics for malaria. All have been proved unreliable, and often quite ineffective. The only other drug that we can recommend from personal experience is methylene blue, which occasionally seems to clear up an attack of subtertian fever in which the temperature has been reduced by quinine almost to normal, but in which a slight febrile reaction still persists. In such cases we have sometimes seen methylene blue act as a charm, but in others, apparently similar, it fails entirely. If employed, a dose of grs. iiss should be administered two or three times a day, but the patient must be warned about the colouring blue of the urine, and the drug sometimes induces a good deal of kidney irritation.

Treatment of Malarial Cachexia.—The splenic tumour accompanying malarial cachexia is best treated by a prolonged course of a simple mixture of iron and arsenic, such as:

℞—Liq. Ferri Perchlor.,	♏v
Liq. Arsenii Hydrochlor.,	♏iii
Aquæ ad.,	℥ss

to be taken three times a day after food.

With the internal use of iron and arsenic may be combined the external use of iodine painted daily over the tumour, or Ung. Hydrarg. Oxid. Rub. may be rubbed daily into the skin over the spleen.

For the anæmia the most effective method of treatment is the use of the arseniate of iron in hypodermic solution. Several preparations of this are on the market, and are sold in sterilized tubes ready prepared for immediate injection.

BLACKWATER FEVER.

(SYN.—*Hæmoglobinuric Fever.*)

We do not here propose to enter into a discussion on the **ætiology** of blackwater fever. It is still a matter of fierce dispute whether the disease is a result of malaria pure and simple or of the same aggravated by the improper use of quinine or whether it is caused by some organism resembling the piroplasma of cattle but not yet discovered. Suffice it for us that the same rules—the use of mosquito-proof dwellings and quinine prophylaxis—protect a man from both diseases.

It is **doubtful** if true blackwater fever exists **in China,** but two very suggestive cases have been reported by Maxwell,[1] Fukien, and McCandliss,[2] Hoihow. Further, Wenyon, Fatshan, says:

> "It ravaged like a plague the Chinese army on the Tonquin border of Kwang-si."

The Chinese coolies also on the Congo and at Fernando Po suffer severely, so there is evidently no racial immunity. The disease has been said to be found in Formosa; we have never ourselves seen a case, and despite diligent enquiries have failed even to hear of one.

We feel, however, the necessity of referring to blackwater fever, as the disease has only appeared to any extent in India during the last quarter of a century, and we hear that it has recently made its appearance in the New Hebrides; it is therefore quite possible that it may yet do the same in China.

Clinical Picture.—The disease commences like an attack of malaria with a rigor, followed by intermittent or remittent fever. Almost from the commencement of the attack the patient begins to feel an aching or more acute pain over the loins, liver, spleen, and bladder; while on micturating the urine is found to be very dark or almost black in colour. The fever continues with bilious vomiting and sometimes diarrhœa. With the commencement of the hæmoglobinuria the patient acquires a very marked icteric tint, and this jaundice deepens as the fever progresses. In fatal cases the urine may be almost or completely suppressed; but in favourable cases, after a few days' fever, the patient breaks out into a profuse sweat, and the fever gradually subsides, the urine becomes more free and passes back through various stages of colour to normal. On examining the urine in the more acute stage enormous numbers of hyaline and hæmoglobin casts may be found, but few or no red cells.

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[1] Society of Tropical Medicines, Transactions, Vol. III, No. 2.

[2] Imp. Customs Med. Reports, 1900, Vol. II, p. 35.

The mortality is about 25 per cent. (Manson).

Treatment.—The difficult question involved in the treatment of blackwater fever is the question of the use or not of quinine. Undoubtedly, in a very few otherwise normal people large doses of quinine will provoke hæmoglobinuric symptoms, and this is much more common in those who have suffered chronically from subtertian malaria. Hence the danger of the irregular use of very large doses of quinine in countries where subtertian malaria is common. Quinine should certainly be administered, and by preference hypodermically, in all cases showing malarial parasites in the blood; otherwise it is best omitted till convalescence is established. The symptomatic treatment consists in the use of large quantities of bland fluids, and, if these cannot be retained either by mouth or rectum, they should be given subcutaneously.

Sternberg's mixture has been much vaunted as a treatment in some places, and consists of a mixture containing Soda Bicarbonate grs. x and Liq. Hydrarg. Perchlor. ♏xxx in each dose. This is given every two hours on the first day. Acid drinks are prohibited.

Calomel, even in heroic doses, has been advocated, but should only be used in reasonable amounts and with caution.

If a European, the patient on recovery should be invalided home.

KALA-AZAR.

(Syn.—*Leishmaniosis.*)

Kala-azar is, at the present moment, whether we regard it epidemiologically or zoologically, one of the most interesting of diseases.

Zoologically, it is **of special interest** owing to the discussion that rages about the relation of the parasite to the herpetomonas group and to the trypanosoma group of protozoa.

Epidemiologically, it is interesting because we are either ignorant of its distribution, the most probable explanation, or it exists as a rare sporadic disease only in some places, while in others it occurs as one of the most serious of epidemics. It has been reported in China only from Tien-tsin, Hankow, Kiu-kiang, and Wei-hsien. That this by no means covers the whole distribution is more than suggested by the following extract from Manson's Tropical Diseases, p. 180.

> "Leishman-Donovan bodies were found by Marchand in January, 1903, in sections of the spleen, liver, and bone-marrow from a patient who had taken part in the Pekin campaign, and had suffered from a long-continued irregular fever, extreme enlargement of the spleen, and anæmia."

We have ourselves failed to discover the parasite in spleen punctures from several likely patients in Formosa.

Kala-azar is reported from the following provinces and stations. (The reports are by microscopic findings. "Absent" implies failure to find the parasite after repeated examinations.)

Chil-li,	Tien-tsin.
Shan-tung,	Wei-hsien.
Hu-pei,	Hankow.
Formosa,	Tainan (absent).
Kiang-si,	Kiu-kiang.

Ætiology.—The cause of the disease is the presence in the tissues of a body known as the Leishman-Donovan body, whose exact position in the zoological world is not yet settled. The parasite has two stages, an intracorporeal and an extracorporeal stage. Its size as found in the body is about 3μ, a little less than half the diameter of a red blood-cell.

Stained with chromatin staining dyes, it shows two masses of chromatin, a larger mass, the nucleus, staining well, but not so deeply as a smaller, usually rod-shaped, mass, the micronucleus or centrosome.

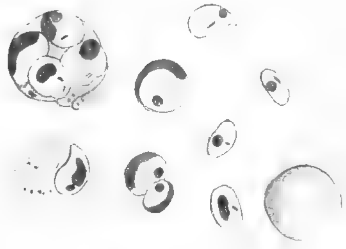

FIG. 33.—Leishman-Donovan bodies. (*Da Costa's Clinical Hæmatology.*)

Multiplication in the body takes place by simple fission, the nucleus and centrosome dividing first. The parasites are intracellular, and the cell is gradually distended by the multiplication of these bodies, till at length it bursts, when the germs attack other cells of the tissue, or are set free in the blood.

Outside the body in culture media the cells elongate till they become pyriform in shape and grow a flagellum from the micronuclear end. They also become slightly mobile, but always differ from trypanosomes in the absence of an undulating membrane. How transmission to man occurs we have as yet no clear proof, but some evidence has been given in favour of the bedbug as the carrier and second host of the parasite.

Clinical Picture.—There are three forms of the disease at present known. The common form from which kala-azar derives its name. A local form causing skin lesions, the oriental boil. An infantile form, infantile splenomegaly.

Some would make these separate diseases. Our knowledge at present does not justify this unnecessary multiplication of terms for what are morphologically quite indistinguishable parasites. Oriental sore has been reported once from Hongkong, but not in a Chinaman; infantile splenomegaly never from China, and we shall not discuss these in this work. Suffice it to say that the former is probably confined to camel-using countries, and the latter, as far as is at present known, to the north coast of Africa.

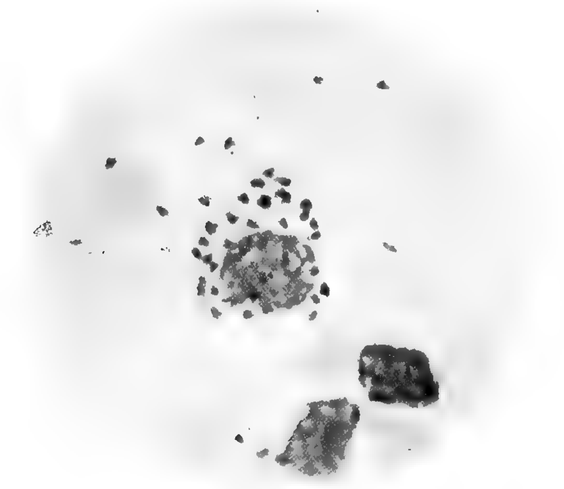

FIG. 34.—Leishman-Donovan bodies, × 1000. Oriental sore. (*Bell and Sutton, Hongkong.*)

Kala-azar type of disease. The initial fever commences usually with a rigor and often with vomiting. Occasionally it is intermittent, but more often remittent. It continues for some weeks, during which the spleen and liver enlarge. The initial fever is followed by an afebrile period, but as the disease develops irregular attacks of fever occur, often lasting for several weeks, usually without rigors and uninfluenced by quinine. After a time the fever ceases to rise to any great height, but continues with comparatively short intermissions as a low fever. Emaciation becomes extreme, and with the great enlargement of the liver and spleen the patient presents a very typical picture of a man with wasted limbs and very protuberant abdomen. Œdema of the legs and ascites occur in very late stages. Anæmia is also a very marked feature of the disease and with it an earthy colour of the skin, the skin itself being rough and ill nourished. Epistaxis and bleeding gums are common. The tongue remains clean and the appetite may be good. The course of the disease is some one or two years, and in about 96 per cent. of the cases it ends fatally, though usually from some intercurrent affection, especially dysentery. The anæmia, while very marked,,is not accompanied, as a rule, by any great diminution of red cells; there is, however, a marked decrease in the white cells to about 1,000 to 2,000 or even less per cubic millimeter. This leucopenia, though applying to all the white cells, affects especially the polymorphonuclear cells, so that there is a relative increase of lymphocytes, especially large mononuclear cells.

Diagnosis.—The diagnosis can only certainly be made by the discovery of the parasite. There is at least one disease common in some tropical and subtropical regions from which the diagnosis is impossible by any other means. This disease also consists in a progressive enlargement of liver and spleen with œdema and ascites in the later stages. The cause of it is still unknown. The only other diseases likely to be confounded are chronic subtertian malaria, where the blood examination and the results of treatment soon show the true nature of the case, and malignant disease, especially sarcoma of the abdomen, which is commonly associated with irregular fever.

The parasites may be sought for in the leucocytes of the circulating blood in which they may be fairly common in very advanced cases. They can only, however, be obtained with any certainty by puncture of the liver or spleen. The liver should be punctured by preference, as no danger attends this small operation; bleeding from the spleen may occur after puncture, but we believe that the danger of this, if proper precautions be taken, has been exaggerated. The instrument used should be a glass hypodermic syringe with a fine though sufficiently long needle. It should be borne in mind that it is not the blood so much as a minute quantity of the pulp or the juice of the organ that is required. The patient should hold his breath while the puncture is made, and a firm bandage should be applied to the abdomen after the puncture. The syringe and needle must be absolutely dry—*any trace of water causes the parasites to swell up and disappear*—therefore, after boiling the syringe it should be washed out with absolute alcohol, which should also be blown through the needle, and the whole then warmed to ensure the complete evaporation of the alcohol.

Treatment.—No specific treatment is known. Quinine is useless, and the same may be said of arsenic in all its forms. The only hope is to place the patient in the best conditions possible as to nourishing food and fresh air.

RELAPSING FEVER.

(SYN.—*Spirillum Fever; Famine Fever.*)

Relapsing fever is a disease **caused by a spirochæte** which is present in the blood during the febrile period. In China the first microscopic report of relapsing fever was given by Hill,[1] Pakhoi. It has since been reported frequently from Shanghai[2] and also from Han-kow.[3] Apart, however, from these accurate microscopic reports, epidemics of relapsing fever have frequently been described, especially accompanying outbreaks of famine in North China.

Relapsing fever is reported epidemically from the following provinces and stations:

Chi-li.	Tien-tsin.
Kiang-su.	Shanghai.
Hu-pei.	Hankow.
Kwang-tung.	Pak-hoi.
Hong-kong.	

Ætiology.—The causal germ, the *Spirochæta recurrentis*, is a delicate corkscrew-shaped organism, 7μ to 9μ long with three to six bends, and a flagellum at one end. In fresh blood it shows very active twisting movements. Whether such organisms should be classed under the protozoa or bacteria is still a matter of question; as, however, the preponderating opinion seems in favour of the former classification, we have included relapsing fever and yaws in this chapter.

The parasite is probably carried in China, India, and Europe by the common bedbug, in Africa by the tick. Owing to the geographical distribution and to slight differences in pathological effect, some would differentiate the parasite under three different names. In the present state of our knowledge this is quite unjustifiable, and only adds to the already terrible confusion in the classification of the pathogenic protozoa.

The incubation period is from two to ten days.

Clinical Picture.—The patient is suddenly seized with a rigor, giddiness, vomiting, and headache. The temperature rises to 105° F., or even to 108° F., and the pulse is correspondingly rapid. The spleen is enlarged, and jaundice is present, though this may vary from a slight icteric tint in the eyes to a well-marked jaundice. The tongue is heavily coated and vomiting is common. The temperature remains high till the fifth or sixth day when, after a preliminary further rise, it falls to normal by crisis, accompanied by profuse sweating and diarrhœa. After four or five days of apyrexia the temperature again rises, and a relapse occurs with a repetition of the same symptoms on a rather milder scale, as a rule; a second relapse follows the first, and three, four, five and even more have been recorded. The later relapses are usually very short, from two to three days. Pregnant women almost always abort.

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[1] Journal of Tropical Medicine, 1904, p. 35.

[2] Shanghai Health Reports.

[3] London Mission Hospital Reports, 1906.

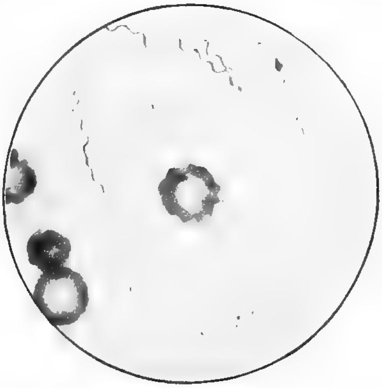


FIG. 35.—Spirochæta recurrentis. (*From Pitfield's Bacteriology.*)

The mortality is about 6 per cent.

The diagnosis is easily arrived at by the blood examination and by observation of the course of the temperature chart.

Treatment.—Prophylactic treatment will consist in such domestic cleanliness as will exclude from the houses all bugs and other biting parasites. Medicinal treatment is useless to control the disease or to prevent relapses. An immunising serum has been prepared by immunising monkeys against the disease, and it seems likely that this will eventually prove a very successful method of treatment.

YAWS.

(SYN.—*Frambœsia.*)

Yaws is not a disease of China, but, as in South China it is from time to time imported by coolies returning from the Straits and other places, and as these cases give rise at times to further infections in their own villages, we think it well to give here a brief description of the disease.

Ætiology.—Yaws is very contagious, but the virus must reach the patient through a breach of surface, such as a scratch or insect bite or preexisting ulcer.

No **age** and neither **sex** is exempt, but as one attack protects against further infection, the disease is most common amongst children. The actual causal agent is a tryponema closely resembling the tryponema of syphilis, but more delicate; it is called the *Tryponema pertenue*.

Clinical Picture.—The incubation period is about a month, and there are frequently prodromal symptoms, such as fever, headache, pains in the back and limbs, etc.

The primary eruption consists in the appearance of a slight papule at the site of inoculation, which after about a fortnight ulcerates but soon heals, leaving but little scar to mark its former situation. This primary sore is sometimes absent, and is often missed.

The secondary eruption consists of small papules which grow to the size of a pea, and by running together may become very much larger. Red at first, the skin over them soon breaks down and leaves a mulberry mass of bleeding granulations, exuding a sero-purulent fluid which forms crusts and scabs over the ulcers. The ulcers are foul-smelling, but not painful, unless as the result of their special situation. The papules are specially common over the face and round the anus, and on the external organs of generation; the mucous membranes may also be affected.

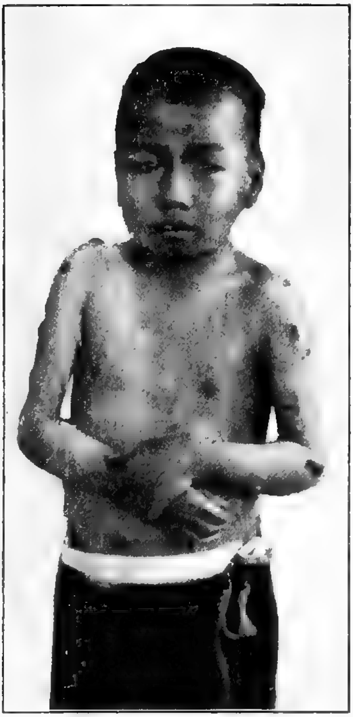


FIG. 36.—Yaws. (*J. P. Maxwell, Yungchung.*)

The first eruption is frequently followed by relapses, which again are preceded by the prodromal symptoms as before. The whole disease may last from a month or two to as many years.

Diagnosis.—The diagnosis is not difficult. Formerly yaws was confounded with syphilis, but it has now been shown that both diseases in any of their stages may occur concurrently in the same patient.

Treatment.—Treatment may be summed up in the words cleanliness and potassium iodide. Externally, daily bathing of the parts and dressing with any mild antiseptic. At times the ulcers will need to be touched with pure carbolic acid or other local escharotic. Internally, potassium iodide in doses of grs. v three times a day.

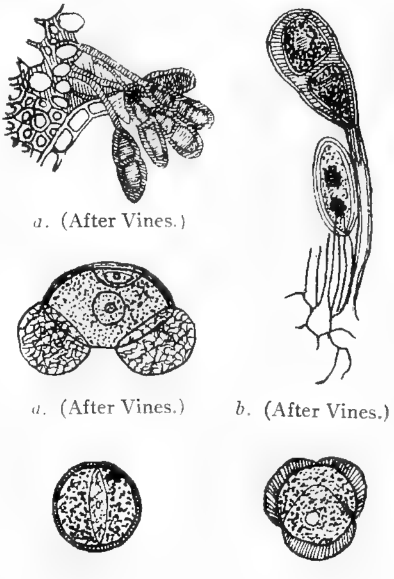
CHAPTER VI.

DISEASES CAUSED BY METAZOAL PARASITES.

Our geographical limitations happily allow us to exclude from our studies many of the metazoal parasites found in other parts of the globe; for example, the filarial group as present in man is reduced to a single species. Dracontiasis appears to be absent from China,[1] as also is the *Schistosomum hæmatobium.* On the other hand, China and the far east seem to be especially the happy hunting ground of almost all varieties of intestinal parasites and of those affecting the liver. At least four Trematodes and one Schistosome have been first reported from China and Japan.

The **pathogenicity of metazoal parasites** is very much less than that of their protozoal brethren, and it is often a difficult matter to judge how far the hosts of these unpleasant creatures suffer from their hospitality. We shall touch on this matter under the headings of the several varieties. This question is still a good deal *sub judice*, and we shall try to represent it clearly from both points of view.

Before entering, however, on the particular description of each parasite, a word should be said on the **preservation of worms** for further examination. Our own experience, and it has been often confirmed by that of workers at home, is that most of these parasites collected and sent home for examination are absolutely spoilt by the methods by which they have been preserved. It should be clearly understood that glycerine, though useful for rendering many of the worms clearer for examination, is absolutely destructive as a medium for their preservation. The method of easiest application and most general use is as follows:


a. (After Vines.)

a. (After Vines.) *b.* (After Vines.)

c. (E. Day.) *d.* (E. Day.)

FIG. 37.—Moulds and spores in fæces. (Greatly magnified.)

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[1] A case has been reported by Sutton from Hongkong, occurring, however, in an Indian. Bilharziosis. Allbutt and Rolleston note that "Sporadic and imported cases have been known in Shanghai." *System of Med.*, Vol. II, Pt. II, p. 864. This was probably in 1901–1903, when the Indian troops were there, but the reference is not given.

Transfer the living worm from the intestine or fæces to normal saline solution in a test-tube, and shake vigorously[1] to remove débris from the mouth parts. Place in a Petri dish. Drop into a pan of 70 per cent. alcohol heated to just short of boiling (boil and then allow just to come off the boil). This kills the worm in an extended position. Store in cold 70 per cent. alcohol.

The **Chinese** hold many **peculiar notions** on the subject of pathology, and there are none more peculiar than those on the subject of worms. We give here an extract from a report of Dudgeon, of Pekin, from the Customs Medical Reports.[2]

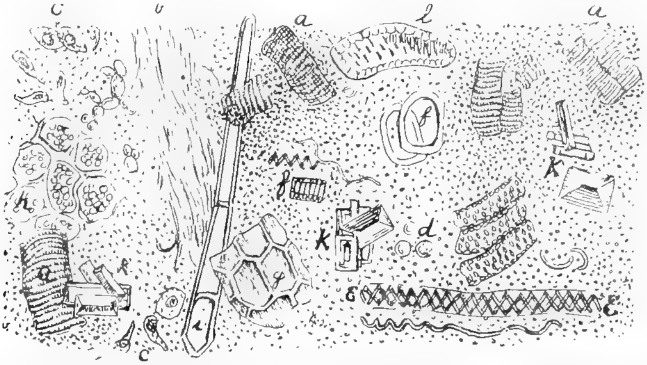

Fig. 38. –Fæces: *a*, Muscle fibres; *b*, tendon; *c*, epithelial cells; *d*, leucocytes; *e*–*i*, various forms of plant-cells, among which everywhere large numbers of bacteria (I) are scattered; between *h* and *b* are yeast-cells; *k*, ammoniomagnesium phosphate. (*Landoi's Physiology.*)

"The Great Herbal states that there are nine sorts of worms that infest the human body. The first, called the Fu worm, is in length 4 fen, and is the chief of his class; the second is called Yu, and measures from 5 to 6 inches. The presence of this worm gives pain above and below, and the patient has frequent inclinations to spit saliva or water. This one, if it injures the heart, causes death. The third is a little worm not quite an inch long, with small head and large procreative powers; the subject of this worm is languid and weak, has no animal spirits, and his back and limbs are feeble. When it grows to the length of a foot it is dangerous. The fourth is called the flesh worm, it resembles rotten apricots, and the subject of it sighs and is dull. The next is called the lung worm and resembles a silkworm, and a person possessed of it coughs and ultimately begets phthisis. The sixth is the stomach worm, and it resembles a frog, and there is nausea, retching, and vomiting with it. The seventh is called the weak or diaphragmatic worm, and it is like the ridges of a pumpkin, and the subject of it spits a great deal. The eighth is the red worm like raw flesh, and with it there is noise in the bowels when it moves. The ninth variety is the Jao, small and like the vegetable worm. It is found in the large bowels, and causes leprosy, itch, piles, fistula, tabes, tooth ache. All the above worms reside in the stomach and bowels, and if a person is

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[1] In the case of Cestodes the shaking must be more gentle, or the segments will be separated.

[2] *Imp. Customs Med. Reports*, 1875, Vol. I, p. 23.

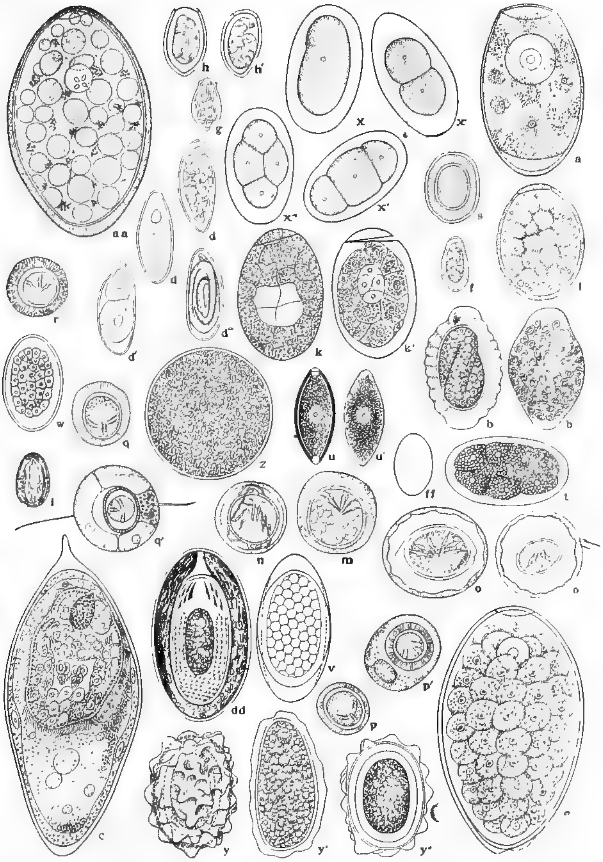

FIG. 39.—Eggs of human parasites. ×250 diameters. (*Henry E. Ward, "Reference Hand-book of the Medical Sciences."*)

a, Egg of Paragonimus westermanni, from sputum of man; *aa*, egg of Fasciola magna; *b*, egg of Eustrongylus gigas in optical section; *b'*, the same in surface view; *c*, egg of Schistosomum hæmatobium, from the urine of man; *d*, *d'*, *d''*, eggs of Oxyuris vermicularis, taken from the uterus of female worm; *d'''*, same in stage from human fæces; *dd*, egg of Echinorhynchus gigas; *e*, egg of Fasciola hepatica; *f*, egg of Opisthorchis felineus; *ff*, outline of egg of Opisthorchis noverca; *g*, egg of Opisthorchis sinensis; *h*, egg of Dicrocœlium lanceolatum (lateral aspect); *h'*, the same in surface view; *i*, egg of Heterophyes heterophyes; *k*, egg of Dibothriocephalus latus; *k'*, the same with operculum opening; *l*, egg of Diplogonoporus grandis, taken from the uterus; *m*, egg of Dipylidium caninum; *n*, egg of Hymenolepis nana; *o*, egg of Hymenolepis diminuta, elongated form; *o'*, the same, not elongated; *p*, egg of Tænia solium, without external membrane; *p'*, the same with external membrane; *q*, Egg of Tænia saginata, without external membrane; *q'*, mature egg of Tænia saginata; *r*, egg of Tænia africana; *s*, egg of Tænia confusa; *t*, egg of Strongyloides intestinalis, from human fæces; *u*, egg of Trichocephalus trichiuris, as in human fæces; *u'*, same from uterus; *v*, outline of egg of Strongylus subtilis; *w*, egg of Ankylostoma duodenale, cleavage well advanced; *x*, *x'*, *x''*, *x'''*, egg of Necator americanus, from human fæces and with beginning cleavage; *y*, egg of Ascaris lumbricoides from human fæces, seen in surface aspect; *y'*, same unfertilized; *y''*, same as *y* in optical section; *z*, egg of Ascaris canis.

of good constitution no injury is to be feared, but if a person be weak, any disease may arise. The corpse worm lives in a person as long as he lives, when the person dies it also dies. It is the greatest enemy of man, and resembles the tail of a dog and a horse, or thin tendon, and lives under the skin, is three inches long and has a head and tail. When a person takes medicine this worm must first be destroyed, otherwise the medicines will be inefficacious. Lumps in the abdomen turn ultimately into worms."

1. Worms Inhabiting the Lungs. Paragonimus Westermani.[1]

A trematode worm found in the lungs of the inhabitants of certain localities in Formosa, Korea, Japan, and the Philippines. Cases have been reported from South China, but in the absence of further evidence, and considering the relations of that region with Formosa, we incline to believe that these cases must have arisen from association with Formosan patients.

Paragonimus westermani is reported from the following provinces and stations:

Korea: Che-mul-po (abundant); Seoul (abundant).
Formosa: Northern end, villages inland from Tainan (abundant).
Fokien: Fu-chau (rare); Amoy (rare); Chang-pu (rare).

The worm was first described by Manson from a specimen of Ringer's from North Formosa.

This parasite is the cause of a disease known as **endemic hæmoptysis,** an extremely common but not very serious ailment in the regions where the worm is found. Indeed it would seem in some of the villages in Central Formosa the large majority of the inhabitants harbour the parasite.

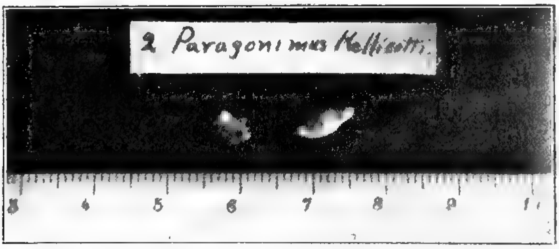

FIG. 40. —Paragonimus kellicotti (life size). A fluke found in the lungs of pigs in America, probably identical with P. westermanni. Specimen sent by H. B. Ward, University of Nebraska. (*Photo by Jefferys.*)

Symptoms.—The hosts of the parasites suffer from a chronic form of cough, often very slight and giving, as a rule, few if any physical signs. The cough is often accompanied by a little blood-stained sputum of the rusty brown pneumonic type—not in the least resembling the blood-stained sputum of tuberculous hæmoptysis, except it be the sputum of a patient some days after a hæmoptysis has ceased. The sputum of the patient is by no means always stained with blood, there may be weeks or months with no trace of blood, as in the case of one of our hospital assistants, but none the less the ovum of the worm is always easily demonstrated in the sputum by spreading a little of it on a slide and examining with the low power of the microscope. The disease is essentially of a chronic nature and does not, as a rule, seriously affect the health of the host. Exceptions to this rule occur, however, though not with great frequency.

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[1] For the relative position of this and the other worms in the natural order of Helminths see the table at the end of the chapter.

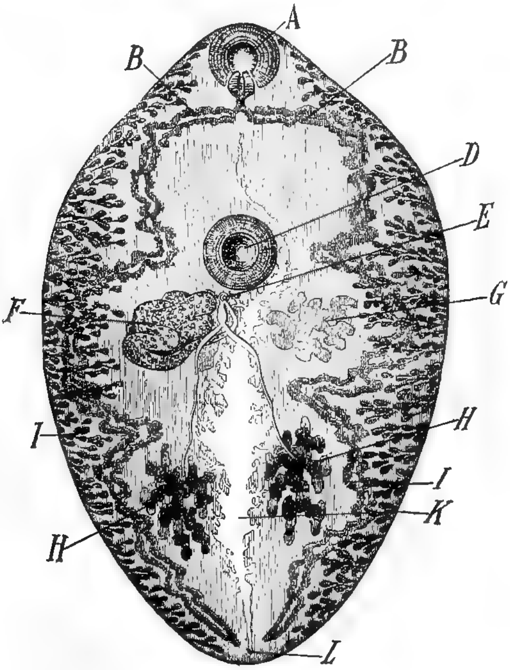

FIG. 41.—Paragonimus westermanni (ventral view); 10×1. *A*, Oral sucker; *B*, cæca; *D*, acetabulum; *E*, genital pore; *F*, uterus; *G*, ovary; *H*, testicles; *I*, vitelline glands; *K*, excretory canal; *L*, excretory pore. (*Tyson after Braun.*)

Attacks of severe hemoptysis are the commonest serious complication. In the case referred to before we have seen a hemoptysis of about a pint of fresh blood suddenly occur, but such attacks are very rare; moderate ones of this nature are more common. The worms at times are said to wander from their normal habitat and have been found in the brain, scrotum, orbit, etc. Pulmonary phthisis sometimes occurs in a patient suffering from endemic hemoptysis, but not, in our experience, with greater frequency than in the rest of the population.

Pathological Anatomy.—The mature worms live in burrows with thick connective-tissue walls under the pleura, and near the surface of the lung. These burrows connect with the bronchi through the capillary bronchial tubes and, discharging their ova-containing secretion into the former, excite the cough and expectoration.

Description of the Parasite.—The mature worm is roughly the size and shape of a large pea; it measures about 8 to 10 mm. in length and 4 to 6 mm. in breadth. The small oval sucker is close to the anterior edge of the body, the larger ventral sucker being just anterior to the middle of the body. The intestinal canals reach to the extreme posterior end of the worm and run a somewhat wavy course. The testes are small, branched, and laterally disposed. The ovary is branched and is placed slightly behind and to one side of the ventral sucker. The uterus is short and folded on itself. The genital pore is close to the posterior edge of the ventral sucker. The yolk glands are marginal and large. The excretory vesicle is narrow and runs the whole length of the body. The ova are large, 80 to 100μ in length by 40 to 60μ in breadth, are of a yellowish colour, with a very well marked operculum and very distinct nucleus. Kept in fresh water, in about a month a ciliated myracidium develops and, escaping from the shell, swims freely in the water. We do not as yet know how the larva again reaches man, but probably through a snail or fresh-water mollusk.

2. Parasites of the Circulatory and Lymphatic Systems.

Filaria Bancrofti (*Syn.—F. Sanguinis Hominis*).

The only filaria as yet known to be parasitic to man in China is the *Filaria bancrofti.*

The distribution of this parasite is rather difficult to find out. It would appear to be common along the coast of South and Central China, especially in the province of Fokien, reaching from Canton in the south, to Shanghai in the north; it is not reported, however, as extending inland except along the valley of the Yangtse.

The distribution of the disease is in some cases very peculiar, and not at all easy of explanation. For example, while it appears to be most prevalent in coast regions, islands such as Hainan and Formosa are left practically untouched.

The incidence, too, of the disease seems very irregular even in the regions most affected. In regard to South Fokien, for instance, Manson estimated the incidence in Amoy at about 10 per cent. J. P. Maxwell,[1] in Changpoo found 25 per cent. of infected individuals among the general population, while 2.4 per cent. of his patients came to the hospital on account of diseases caused by the parasite. In Yung-chun in the same

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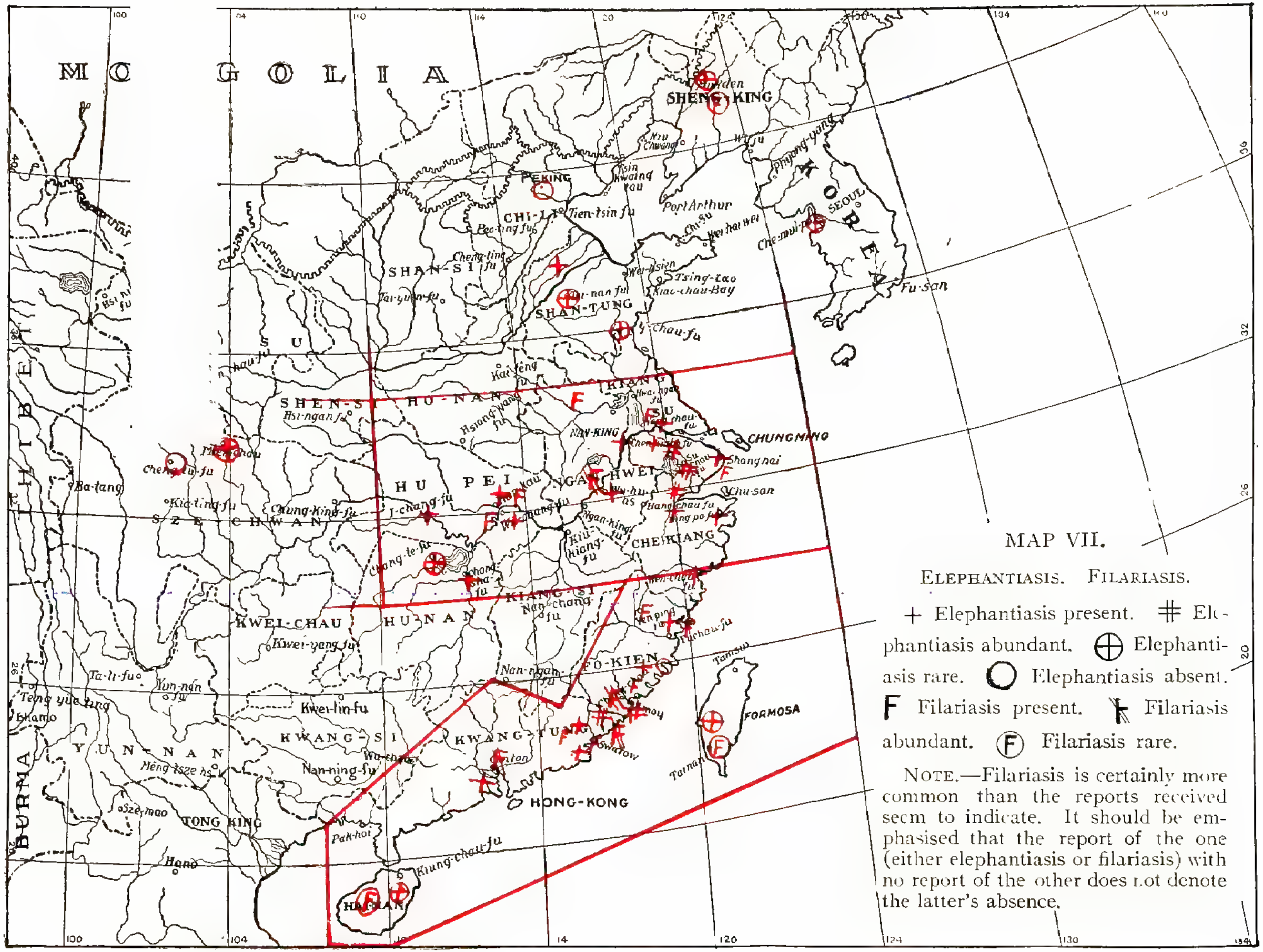
[1] Filariasis in S. Fokien, pp. 11, 12.



MAP VII.

ELEPHANTIASIS. FILARIASIS.

+ Elephantiasis present. # Elephantiasis abundant. ⊕ Elephantiasis rare. ○ Elephantiasis absent. F Filariasis present. ₣ Filariasis abundant. Ⓕ Filariasis rare.

NOTE.—Filariasis is certainly more common than the reports received seem to indicate. It should be emphasised that the report of the one (either elephantiasis or filariasis) with no report of the other does not denote the latter's absence.

province less than 100 miles north-west of Amoy, Maxwell reports the disease to be practically absent.

Symptoms.—It should be clearly understood that the *Filaria bancrofti* does not of itself cause either disease or inconvenience to its host. Its nightly discharge of embryos into the blood stream does not appear to affect the patient in any way whatever. Indeed it would seem that it is only owing to injury to the parent worms that diseases occur in the hosts.

The affection especially associated with the parasite is elephantiasis arabum, but in the victims of this disease micro-filariæ are seldom found in the blood. Hence the question has been raised whether we have any **right to include elephantiasis in filarial diseases**. Considerable dispute still rages over this point. The reasons in favour of the association of these two conditions seem, however, to us to be sufficiently convincing. The most important arguments in favour of the supposition are:

1. The close geographical association of filariasis and elephantiasis, and, whereas in Formosa filariasis is rare, elephantiasis is practically absent.

2. That lymph scrotum, indisputably a filarial disease, passes directly on into elephantoid scrotum.

3. Filarial lymph glands and true elephantiasis are both accompanied by the same type of lymphangitis.

Why, then, are the micro-filariæ absent from the blood in elephantiasis?

Either the parent worms are dead, or the lymphatic vessels from the affected area being already blocked, no micro-filariæ can now reach the peripheral circulation.

The question of how the blocking of the lymphatics occurs still remains to be explained. Manson surmises that, owing to some injury to the parent worm, ova are discharged in place of embryos and the ova being nearly five times the diameter of the free embryo are unable to traverse the lymphatic glands and so block the lymphatic channels. In support of this theory Manson has actually seen ova in a case of lymph scrotum and in another of lymph glands. The simple blocking of lymphatic channels is not, however, enough in itself to produce elephantiasis; it may produce a lymphatic œdema, but this is quite different from true elephantiasis. The stasis of lymph, however, renders the tissues particularly susceptible to septic infection, and it is the lymphangitis occurring as a result of this, that, acting on the part already suffering from lymph stasis, produces the characteristic condition of elephantiasis. The most important sequelæ then to these accidents to the parent worm are:

1. **Elephantoid Fever.** This is practically the expression of an

attack of lymphangitis and at times the fever may be well marked, while the lymphangitis almost escapes notice. The fever has no very characteristic chart, but consists of an irregular temperature accompanied either by a simple increase and tenderness in the lymph glands, or evident lymphangitis, or an erysipelatoid inflammation of the affected area.

2. **Abscess.**—Possibly as the result of the death of the parent worm. If superficial the abscess is of little consequence, but in cases where it occurs in the thoracic or peritoneal cavity it may lead to serious complications or a fatal issue.

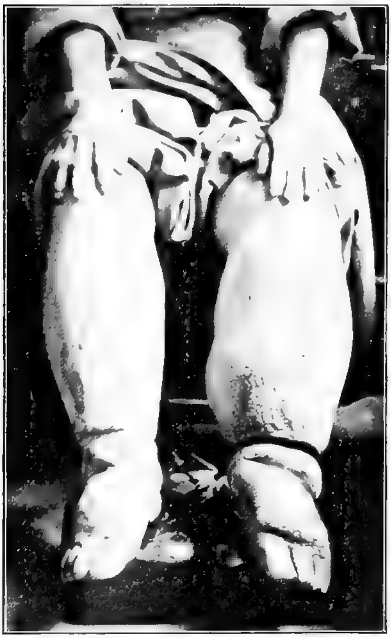


Fig. 42.—Elephantiasis of both legs. Compare the size of the legs with the arms. (*Jefferys.*)

3. **Varicose Groin Glands.**—These may exist alone, or associated with lymph scrotum, or even chyluria. They are very characteristic in appearance and touch, a soft and somewhat elastic lobulated mass in one or both groins. Skin natural and movable over the swelling. They become larger, tenser, and more painful with the attacks of elephantoid fever. A hypodermic needle withdraws rapidly coagulating lymph, usually containing micro-filariæ.

4. **Lymph Scrotum.**—In this the scrotum is slightly enlarged, very much more rugose than usual, and from time to time having on its surface small blisters, which bursting, discharge large quantities of milky or straw-coloured rapidly coagulating lymph. Usually this and the patient's blood contain micro-filariæ. Varicose groin glands are a frequent accompaniment and there is a common tendency for the lymph scrotum to pass into a true elephantiasis scroti.

5. **Chyluria.**—This curious condition, namely the passing of milky and rapidly coagulating urine, depends on the rupture of a lymph varix in the wall of the bladder. Retention of urine from the formation of chylous coagula is sometimes very troublesome.

6. **Elephantiasis.**—In 75 per cent. of cases (Manson) the lower extremities, one or both are affected, either alone or in association with disease of the scrotum or other parts.

The disease commences with regular attacks of elephantoid fever with lymphangitis, and each attack leads to increase in the permanent thickness.

Pathological Condition.—The most noticeable symptom is of course the great increase in the part affected. At times this may be enormous, one leg may increase to many times its natural size, while an elephantoid scrotum has been removed weighing 224 pounds. Such enlargement is mainly due to an increase of the fibrous stroma of the cutaneous and subcutaneous tissues. The skin itself is very coarse and hypertrophied, and between it and the muscles is a thick layer of yellowish sodden connective tissue. The blood-vessels and lymphatics are greatly dilated. Hair is coarse and scanty. Nails greatly deformed. The limb pits little, if at all, on pressure. Treatment of these conditions will be dealt with separately.

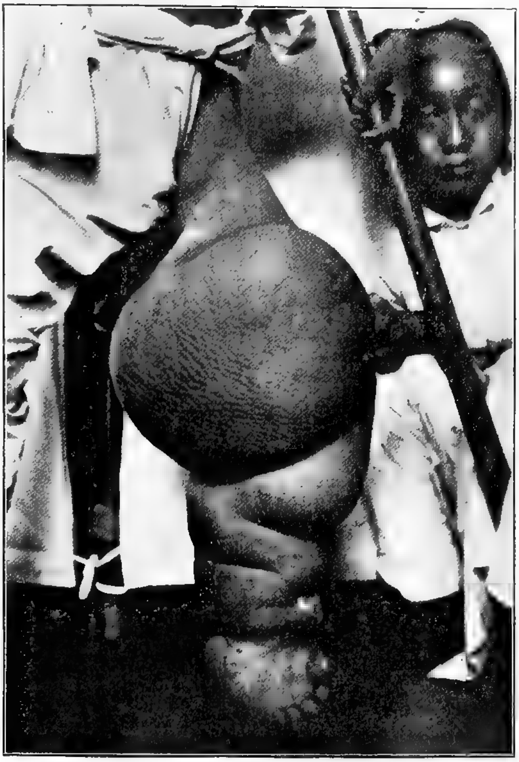


FIG. 43.—Elephantiasis of the leg, with congenital talipes. Circumference 35 inches. Amputation just below the hip-joint. Recovery. (*H. B. Taylor, Anking.*)

Fever and Lymphangitis.—No treatment has any effect on the fever, and symptomatic treatment only should be given; at the same time it is, of course, essential to exclude a concurrent malaria. The lymphangitis should be treated by rest in bed, elevation of the part, and the application of lead and opium lotion, followed by firm bandaging when all the inflammation has disappeared.

Abscess should of course be treated by early surgical measures.

Varicose Groin Glands.—A good deal of difference still exists about the treatment of lymph glands. Manson recommends that they should be let alone, unless causing an incapacitating amount of discomfort, and this is probably the best advice at present. The objections to removal are that it may be followed by lymphorrhagia, by chyluria, or by elephantiasis in one or both legs. Further, unless great care is taken over the aseptic precautions, septic lymphangitis may readily occur and has frequently proved fatal in such cases. It must, however, be added that some of the best-known and most experienced tropical surgeons advocate routine surgical treatment for this condition.

Lymph Scrotum.—The treatment for this troublesome condition is strict cleanliness to avoid further attacks of inflammation, while the scrotum should be kept powdered and suspended. If a debilitating lymphorrhagia is constant, excision may be practised. The operation is quite simple, but care should be taken to remove all the diseased tissues. The same dangers mentioned under varicose groin glands attend this operation.

Chyluria.—No drug has any effect on this condition, but the trouble may be diminished and often for a time arrested by confinement to bed with elevation of the pelvis.

Elephantiasis.—No medicinal treatment is of any use. In early cases a good deal may be accomplished by massage and bandaging, with elevation of the affected part, but in later stages only surgical measures are of any avail.

With regard to the leg many operations have been suggested, but none have stood the test of time. Of the ordinary operations, perhaps the best is the plan used by Castellani, of periodic injections of fibrolysin with bandaging followed by removal of redundant skin. Remarkable results have thus been obtained; but the very serious objection to the treatment for ordinary use in China is the great length of time for which the patient must be under treatment in hospital.

A new treatment which owes its origin to Sampson Handley, suggests the possibility of great alleviation, but of course has yet to stand the test of time. It consists in what the author calls lymphangioplasty, the idea being to create new lymphatic channels to take the place of those already blocked. This he does by introducing a number of long thick silk threads the whole length of the leg, and terminating in the buttock above the diseased part; the limb is supported for some time and well bandaged. Handley's first operation on an elephantoid leg was a failure, owing to a diplococcus organism present in the lymph of the leg, and it was not till this had been rendered sterile by a vaccine that the second operation proved a success. Handley showed the case at one of the meetings of the London Society of Tropical Medicine, and those who saw the result were greatly impressed by the success of the operation.

Elephantiasis of breast or vulva can usually be dealt with by a simple surgical operation.

Elephantiasis of scrotum involving the largest solid tumours ever met with needs a special paragraph.

In cases of large tumours, the patient should rest in bed for a day or two before the operation, with the growth suspended and elevated and a firm bandage round it, to reduce it as far as possible in size, and to drain it of blood. At the time of operation a rubber tourniquet is passed round the neck of the tumour, over and across the pelvis. The testes and cords are first dissected out through vertical incisions and the penis then similarly treated. Lateral flaps, if these can be secured free of disease, are dissected up, and the mass then removed, open vessels being packed up as far as possible on section. Flaps, if none can be left on removal of the scrotum, are obtained from the thighs.

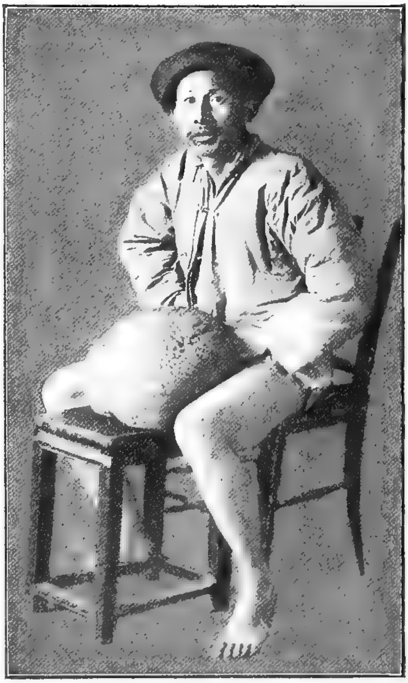


FIG. 44.—Elephantiasis of the scrotum. (*By Wo Kwung Zien, Shanghai.*)

In connection with the subject of elephantiasis of the limbs and genitals, Jefferys of Shanghai writes for us as follows:

Elephantiasis of Legs.—It is very unsatisfactory to feel that amputation is still almost the only form of complete relief from this affection—amputation being, in our opinion, a sign of defeat. A couple of practical points in the handling of these legs, which often submit themselves for treatment, are the following:

Amputation is rarely, if ever, advisable in those dependant on labour for their daily bread. It is seldom that an elephantoid leg is less useful than a stump, or even a fairly good artificial leg, which latter is (usually, at any rate) beyond the means of the patient. In the well-to-do, however, or those of sedentary or no occupation, amputation may be advisable and a finely fitting artificial leg preferable to the diseased one.

In the early stages of the disease, the utmost relief, and considerable delay in progress, may be attained by constantly wearing a well-fitting elastic stocking, or a cheaper elastic, cellular, or flannel bandage, the result being diminution in size and tension, and therefore in weight, and a relaxation of the skin with better circulation. The argument is the same as for varicose congestions. The only way to cure an ulcer is to put the patient to bed, elevate the part and bandage it. There are few elephantoid ulcers so large that they will not respond to this treatment, none so small that they will get well without it. The same is largely true of all chronic congestive ulcerations, but of none so much so as of this variety.

When the whole leg is not involved, occasionally a tumour hangs from some part of it, usually the inner aspect of the upper thigh (Fig. 46). These are not scrotal tumours, or labial tumours, and we do not know their distinctive causation. They are true elephantiasis.

The subject of **elephantiasis of the scrotum** is an old and much-thrashed-out one. The operations are satisfactory, both from the point of view of the surgeon and of the patient. These tumours are not common in Shanghai district. The most prolific source we have ever heard of for them is Tsingkiangpu (Kiangsu). L. T. Morgan tells us he has operated numbers of times (I think he said seventeen) for this condition in a very short term of service. One recommendation we have to make; that is, in case it is necessary to remove the whole scrotum in order to get rid of the disease, the testicles may be safely placed in the loose tissue in the lateral aspect of each thigh, a pocket being stretched for the purpose. This is not by any means always indicated, but there are times when the condition

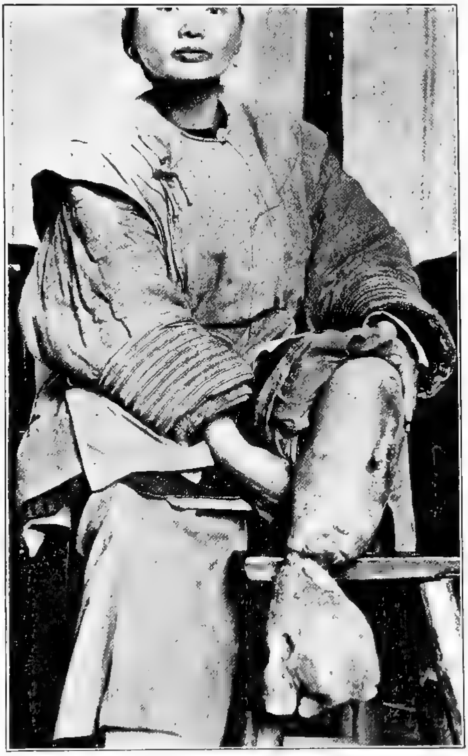


FIG. 45.—Elephantiasis, ready for amputation. (*By W. H. Vanable, Kahsing.*)

of the skin and the desire to avert a recurrence demands complete removal of the scrotal covering.

Vulvar Elephantiasis.—A year ago A. M. Myers, of St. Elizabeth's Hospital, Shanghai, gave us for our museum two excellent specimens, right and left labia majora, one being an inch longer than the other, both almost pedunculated and with ease removed by operation. They were somewhat cystic at their base, and the wounds were slow in healing. This is, we believe, the commonest of the three vulvar conditions. Elephantiasis clitoris we have not seen, and it must at any rate be carefully distinguished from simple hypertrophy.

The case in the photograph is that of elephantiasis labia minora (Fig. 48), as can be easily seen in B, where the tumour is raised, showing the development from the lesser lips and its origin internal to the greater. The upper photograph shows the condition in its more normal position, which the patient described as "closed"—it being necessary to raise the tumour for each act of micturition. There was an ulcerated groove through its centre, and union anteriorly between the two parts. The clitoris was not involved. There were considerable scar tissue and other signs of old ulcers, due probably to the dribbling of urine and other poor drainage. The utmost relief and satisfaction to the patient was experienced from the simple operation of removal. The wound healed promptly and left a remarkably normal-looking vulva. The tumour weighed about half a pound—was not so large as the combined weight of Myers' tumour, and somewhat softer in consistency, though this was possibly due to post-operative change in the case of Myers' specimens.

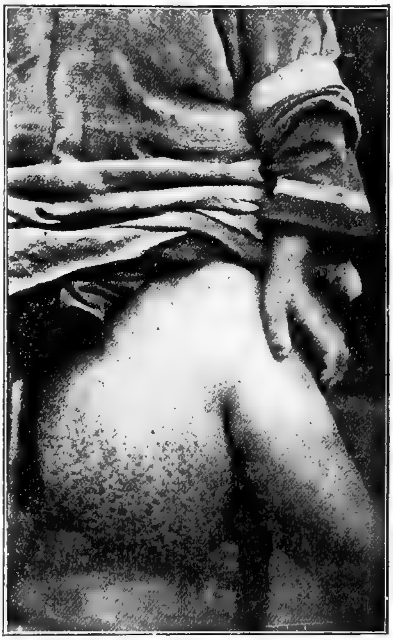


FIG. 46.—Elephantiasis of the inner aspect of the thigh. (*By H. W. Boone, Shanghai.*)

Elephantiasis of the foreskin alone is fairly frequent and readily responds to operative treatment. We believe that some cases of elephantiasis of the scrotum, so called, are really by origin of the foreskin, as in a most interesting report of John D. Thomson of Hankow.

These latter conditions all militate against the possibility of procreation but only until such time as surgical relief is obtained. Cases of exaggerated scrotal elephantiasis report themselves successful fathers after operation, and those of the other two varieties each successful according to his or her nature.

Characters of the Filaria Bancrofti.—The parent worms live together in the lymphatics of the trunk, or extremities, most frequently in pairs, but sometimes six or more together. They appear like long white hairs, the females about 80 by .2 mm., the males about 40 by .1 mm. The head is club-shaped with a simple terminal mouth and the tail blunt and curved up in both sexes. The body of the female is occupied throughout almost the whole of its extent by the uterus packed with eggs, the vagina opening about 1 mm. behind the mouth. The male is said to have three pairs of pre-anal and three pairs of post anal papillæ and has two unequal spicules. Discharging their young into the lymph stream, these are rapidly carried into the general circulation, where they are found at night under the name of *Micro-filaria bancrofti* (*nocturna*). These micro-filariæ are very easily demonstrated in the fresh blood, and may be very satisfactorily stained as permanent preparations. This little eel-like worm, forcing its way through the masses of blood-corpuscles, is about 3 mm. long by .008 broad. When stained it shows the following characteristics: a blunt head and sharp tail; a sheath which is too long

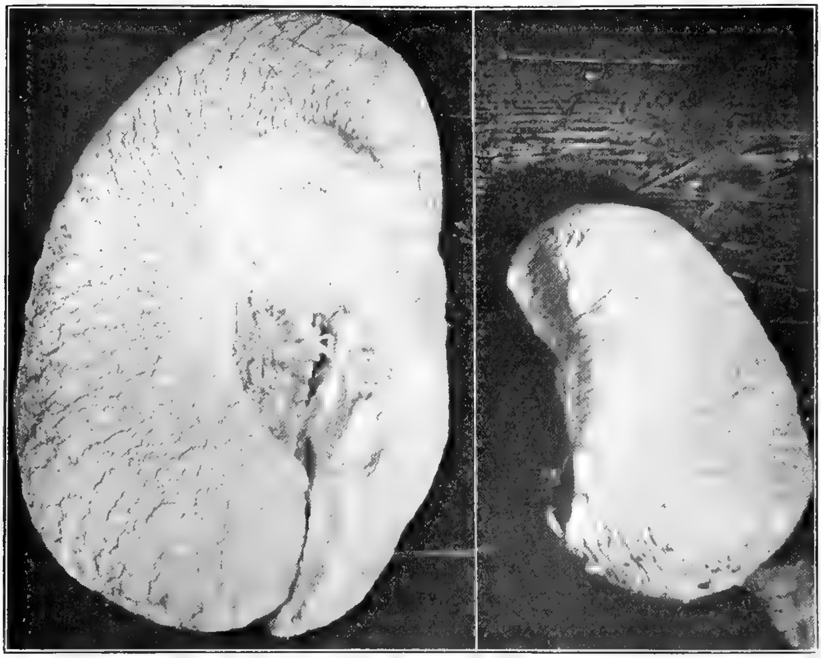
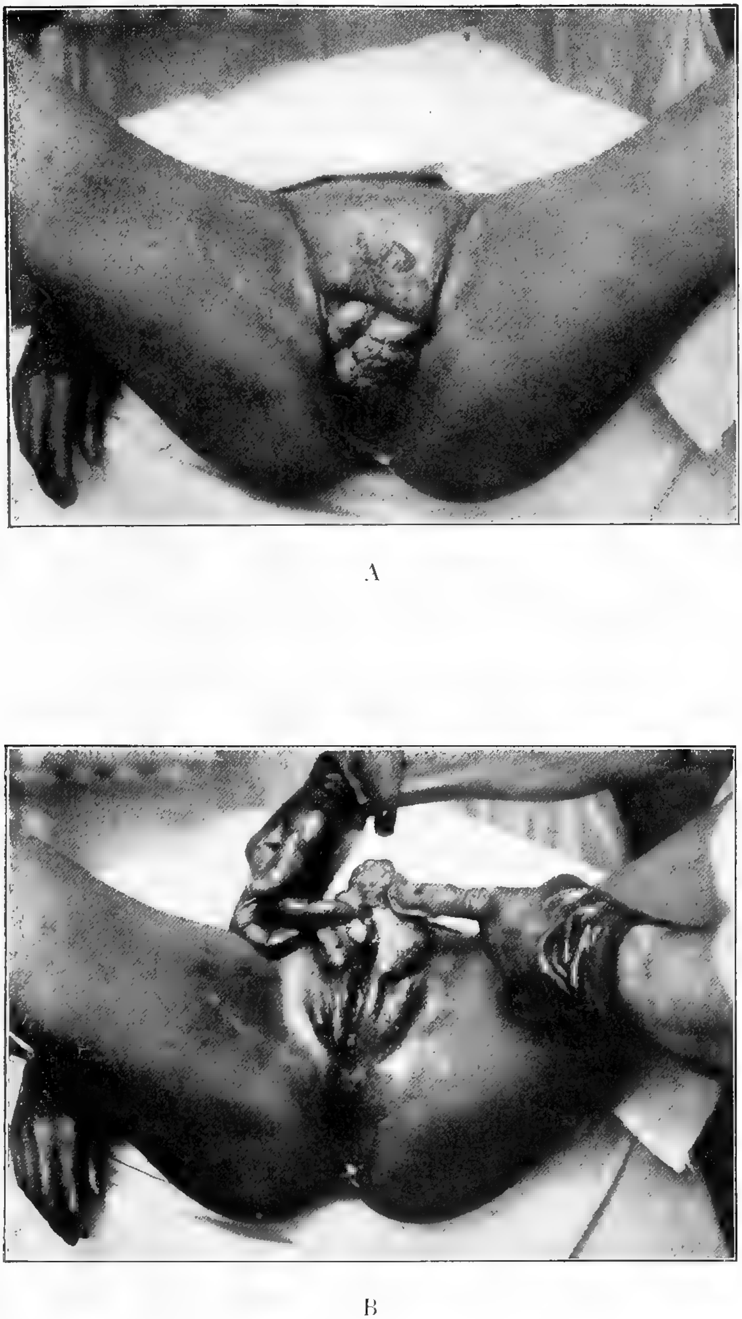


FIG. 47.—Elephantiasis of labia majora. (*By A. M. Myers, Shanghai.*)



A

B

Fig. 48, *A* and *B*.—Elephantiasis of the nymphæ. *B*, Obstructing vulvar orifice. *A*, Elevated. (*By Jefferys*.)

Note.—This tumour was possibly of syphilitic origin.

for the worm, and so may be seen empty and collapsed at head or tail; a nuclear core consisting of well-marked granules passing down almost the whole length of the body, the arrangement of which assists in the differential diagnosis of the different kinds of micro-filariæ, and a break in this core about one-third of the distance from the head where a clear V-spot, the excretory vesicle, exists.

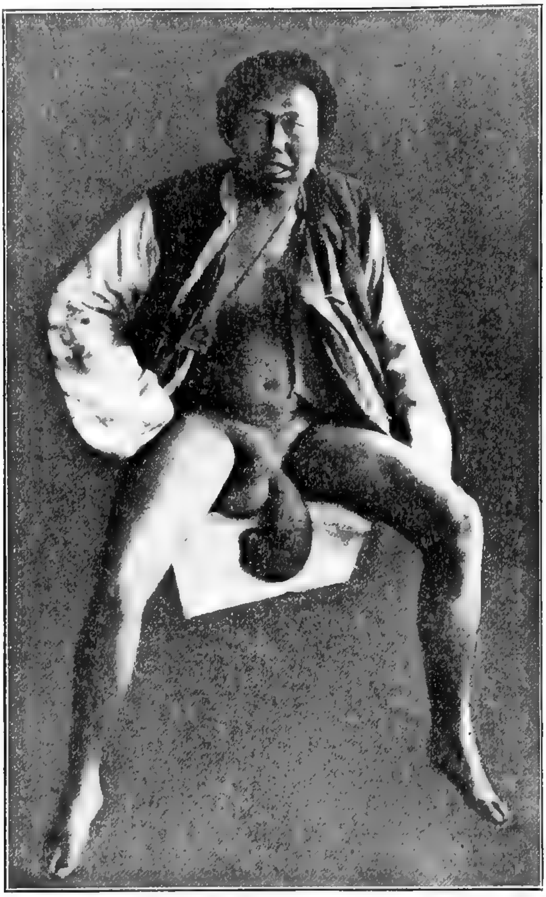


FIG. 49.—Preputial elephantiasis. (*By M. Mackenzie, Jr., Foochow.*)

Elephantoid Growth on Penis. Began sixteen years ago; a. the close of last year pain started in the posterior surface of the tumour, due prboably to the urine forcing a passage in that position. The scrotum was but slightly affected with the disease. After amputation I found the glans and prepuce quite normal. The case is interesting in showing the tumour almost confined to the penis. The amputated portion weighed two pounds. Filariæ were seen in the blood.

Nocturnal Periodicity.—As has already been mentioned, the micro-filariæ can only be found in the peripheral blood at night. Why? Under ordinary circumstances the micro-filariæ are seen very rarely in the per-

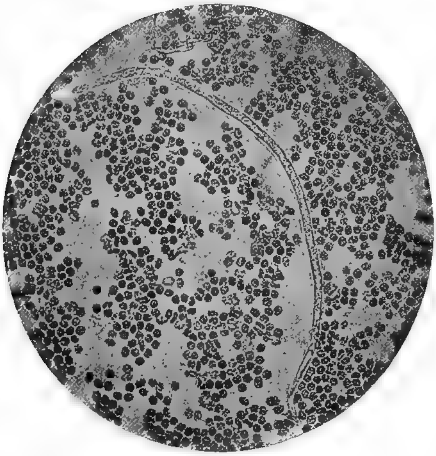


FIG. 50.—The Filaria nocturna. (*Da Costa's Clinical Hæmatology.*) From a photomicrograph of the parasite in a fresh blood film.

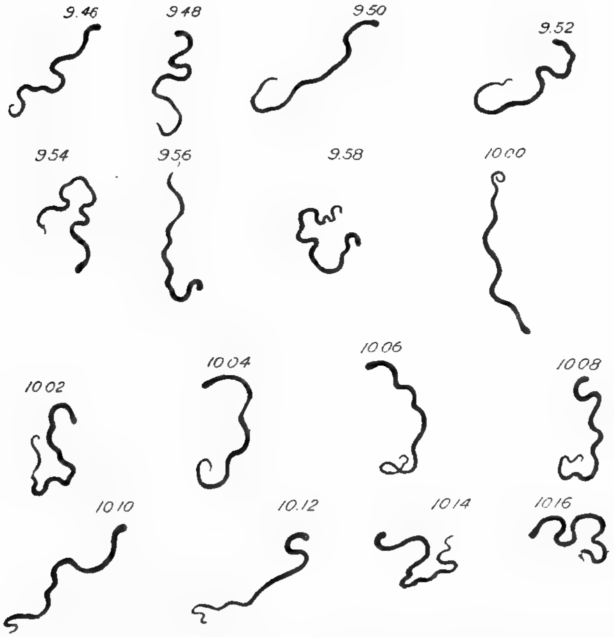


FIG. 51.—Showing the changes in the shape of the Filaria nocturna during the period of half an hour. (*Da Costa's Clinical Hæmatology.*) The sketches, made at two-minute intervals all represent the same parasite.

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the worm appears to be found in different infected districts is very variable. The disease would seem to be confined to the river and lake population, and considering the nature of the embryo this is what we should expect.

Wills, Hupeh, reports: "*S. japonicum* is found in the lakeside

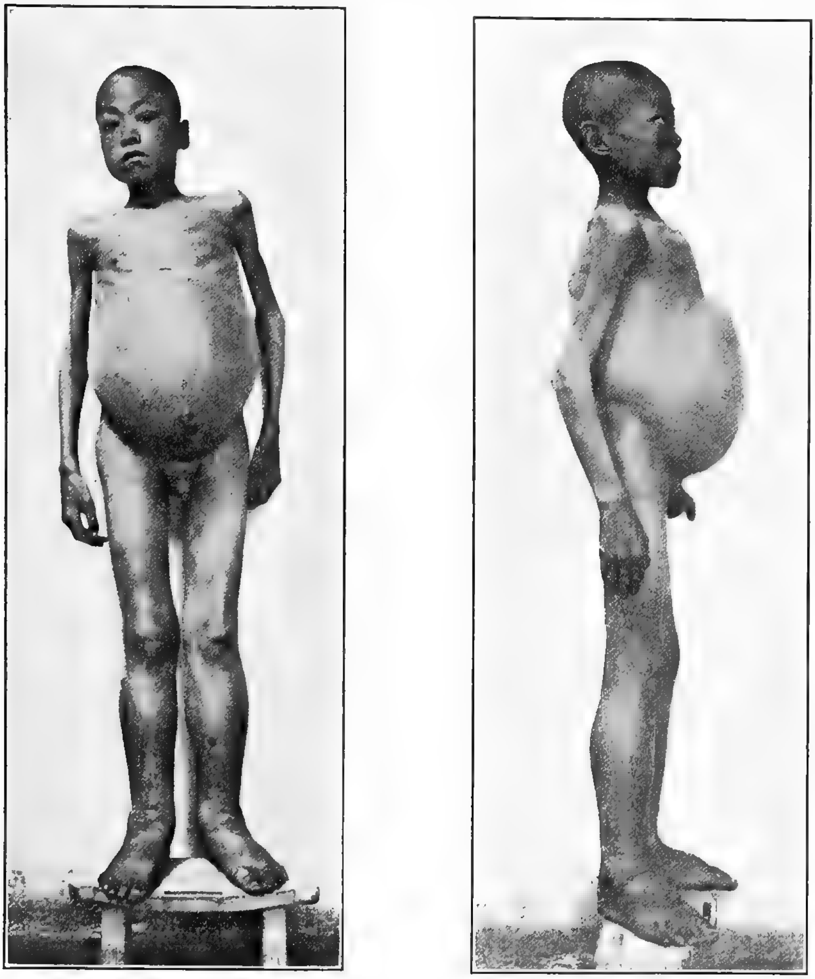

FIG. 52, *A* and *B*.—Case of Schistosomum japonicum. Severe infection of three years' duration. Ova very abundant in stools. After tapping, a large mass of glands forming a tumour as big as the two fists together could be felt in the cæcal region. Liver dullness was diminished. After tapping, by pushing the hand well up under the ribs, the liver surface could be felt to be bossed. Spleen not enlarged.

Age twenty-one. The patient left the hospital a few days after the photo was taken, and looked as if death was imminent. In hospital he was tapped four times, but the abdomen filled up to as great a degree within ten days of each tapping.

This illustrates what one might call the final stage of schistosomum disease, when the previously enlarged liver shrinks with cirrhosis. The only other photos I have seen published were those of Dr. Peak's cases, but I think they illustrated an earlier stage of the infection (earlier, or perhaps less severe). (*Notes, case and photos by J. A. Thomson, Hankow.*)

dwellers, and from what patients say whole villages seem infected; the men often are fisher-folk."

Jefferys, Shanghai, states: "At Bingu, twenty miles from Kashing in Chekiang, *S. japonicum* is apparently endemic and a perfect scourge to the inhabitants."

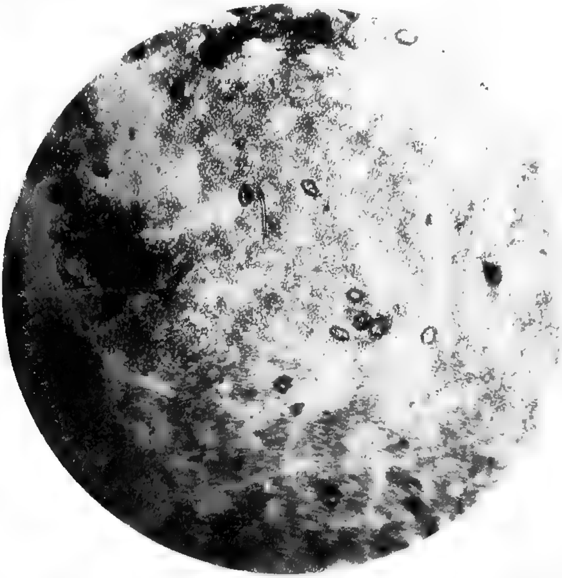

FIG. 53. Ova of Schistosomum japonicum, under low power, in juice expressed from peritoneal glands of case photographed on page 159.

The specimen was obtained post-mortem. Briefly the post-mortem appearances were in this case as follows:

1. An enormously distended abdomen containing about thirty pints of chylous fluid.
2. A shrunken cirrhotic liver, tough and of a grayish-purple color, which on section showed numerous white areas of variable size, from pinheads upward to about as big as a twenty-cent piece.
3. Dense cartilaginous thickening of the walls of the large intestine and warty-like growths of its mucous membrane, but no ulceration.
4. Enlargement of all the peritoneal glands, forming large tumour-like masses along the front of the spine, and on the cæcal region a similar tumour-like mass could be distinctly felt after tapping the subject.
5. Microscopically, ova were found abundantly in the liver and in the peritoneal glands, numerous but not so abundant in the submucous layer of the bowel.

The cirrhotic areas in the liver contained numerous scattered ova and sections of what appeared to be portions of the adult worm. In the less cirrhotic areas, small collections of ova could be everywhere seen between the lobules, as if the terminals of the portal vein were occluded by them.

The post-mortem was made under difficult conditions and I was unable to make a search for the adult worms, but from the microscopical sections it appeared to me that the true pathology of the disease is an embolic process, ova constituting the emboli. Certainly ova are much more in evidence than the adult worms and from the manner in which they are seen to lodge in the terminals of the portal vein, it would seem that they have been carried there by the upward current of the blood; but the fact that the ova are so numerous in the lymphatic glands would lead one to suppose that certain of the adult worms must be lying in the tissues and not in the veins. Nor would worms confined solely to the radicles of the portal viens in the intestines account for ova being liberated into the bowel, for these ova are seen in the stool at an early stage of the disease, long before symptoms of portal stasis appear. Ascites is the normal ending to all of these cases, so far as I have seen, but this was the only case I have ever seen in which the fluid was of a chylous charater. I could not find any evidence of filariæ to account for this. (*Notes, case and photos by J. A. Thompson, Hankow.*)

Symptomatology.—The main symptoms found in *S. japonicum* infected patients are quite easily told. Whether these are always due to the parasite is a matter not so easily settled. The patients, usually men, state that the disease commenced with a malaria-like attack of fever, followed by dysenteric symptoms and progressive enlargement of the abdomen.

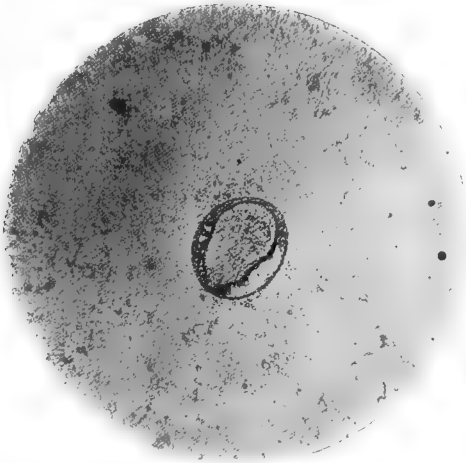

FIG. 54.—Ovum of Schistosomum japonicum. .101 x .075 mm. (*By J. A. Thomson, Hankow.*)

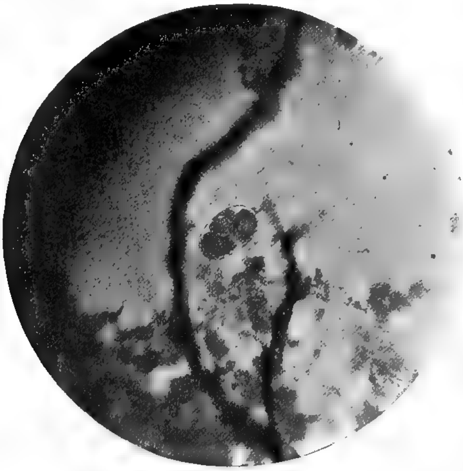

FIG. 55.—Ovum of Ankylostoma duodenale. (*By J. A. Thomson, Hankow.*) The two pictures are micro-photographs of Schistosomum and Anchylostomum ova. They were taken under similar conditions and illustrate the relative sizes of the two ova.

On examination they are found to be emaciated and æmenic, with protuberant abdomen and frequent diarrhœa with mucus and blood in the stools. They suffer from irregular attacks of fever. All complain of

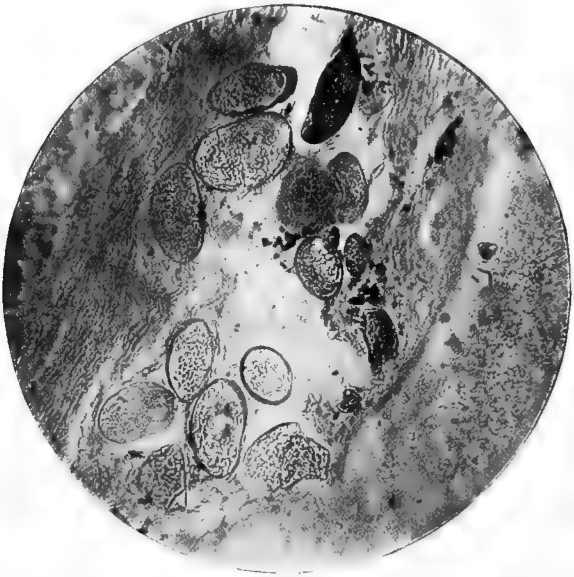

FIG. 56.—Ova of Schistosomum japonicum in biliary ducts, ⅓ objective. (*By Bell and Sutton, Hongkong.*)

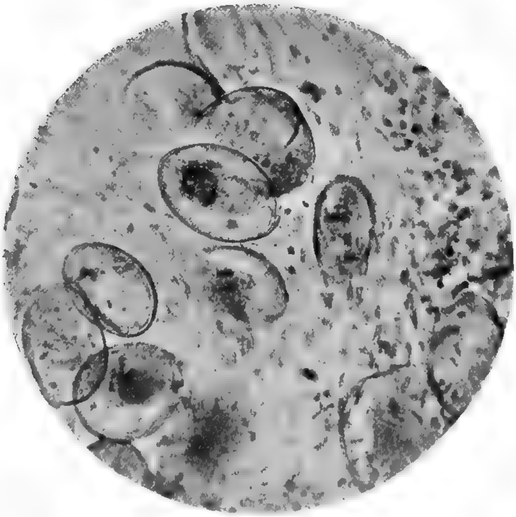

FIG. 57.—Section of intestine, showing ova of Schistosomum japonicum, × 250. (*By J. Bell, Hongkong.*)

dyspeptic symptoms, but the appetite is good and the tongue usually clean.

The abdomen is found to be enlarged with gaseous distention of the bowels and usually, not always, very marked enlargement of the spleen and liver is present, the latter organ being either smooth or rough and bossy, the latter being evidently a more advanced stage of cirrhosis than the former. Ascites is common and general anasarca may be present.

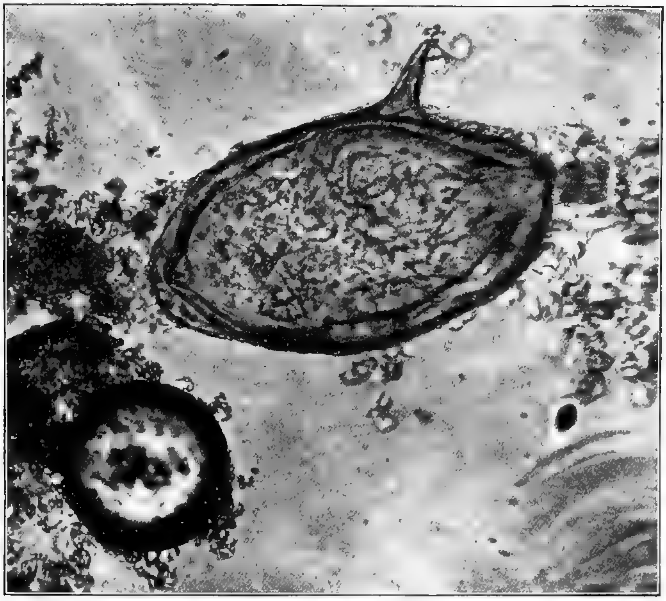

FIG. 58.—Ovum of Schistosomum hæmatobium. For comparison with Schistosomum japonicum and Schistosomum mansoni. This parasite has not yet been reported in China, and is probably not found there. (*By William Pepper, Philadelphia.*)

It is possible, even probable, that all these symptoms may be due to the parasite and to it alone, but in the absence of fuller knowledge on some of these points it must be remembered that a disease with all these symptoms but without this parasitic cause is to be found in China. In Formosa we very frequently meet with such a condition, and on laparotomy have found a similar marked or even extreme cirrhosis of the liver, unaccompanied by any history of an alcoholic cause. It is probable that this disease is also to be found in the regions where *S. japonicum* is endemic, and the causal association of the parasite and the symptoms must therefore be received with caution.

Treatment.—No treatment is known in any way to affect the parasite. The tendency of the disease is to a fatal termination, and though treatment with fresh air and good food may temporarily improve the patient's condition, it is doubtful whether it ever leads to a cure.

Pathology.—The *Schistosomum japonicum* is a small trematode worm of schistosomum type. In size the male worm is roughly the same as an *Ankylostomum duodenale*, about 11 mm. in length by .5 mm. in breadth; the female worm is roughly of the same length but considerably smaller and more thread-like. It differs from the *S. hæmatobium* in its smaller size, the relatively large size of the posterior sucker, and the smooth body of the male worm. The adult worms occupy the smaller mesenteric vessels—arteries, veins, or both.

The eggs are of a yellowish-brown colour, oval and .08 by .04 mm. in size. They have a smooth shell, no operculum, and no trace of a spine. When passed they already contain a well-developed embryo which does not completely fill the shell. Booth[1] found that after incubating for two hours many of the shells had ruptured, allowing a free swimming myracidium to escape. The myracidium is also capable of amœboid movements. The myracidium may escape from the shell before the fæces are passed. The further development of the embryo is unknown.

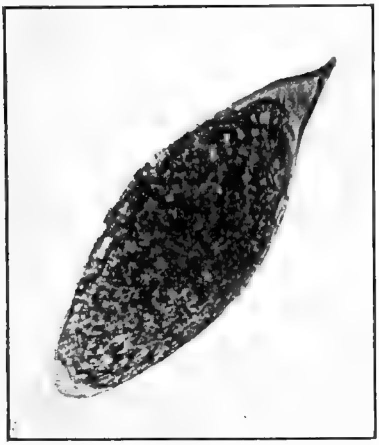

FIG. 59.—Ovum of Schistosomum hæmatobium, with terminal spine. (Not found in China.) The patient was in the African mounted police. (*By William Pepper, Philadelphia.*)

3. Worms Inhabiting the Alimentary Canal and Liver.

China is perhaps the country richest in the world in its intestinal fauna. Nor is this surprising when we remember the habits of the people. Born agriculturists, they waste nothing of the products of nature that can be used for enriching the ground, and all human manure is stored, or even used without storing, for the fields and vegetable gardens. The result of this admirable economy has been very conclusively shown in relation to round worms by Maxwell, Changpoo,[2] who showed that ascaris eggs and young worms could be actually found on fresh vegetables that children were eating in his hospital consulting-room. Jefferys, Shanghai, also found eggs of ascaris and trichocephalus on the roots of cabbages brought to market. The same with the modifications necessary to the life history of the worms is no doubt true of the other helminths.

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[1] *Journal of Tropical Medicine*, June 15, 1907.
[2] *Journal of Tropical Medicine*, Oct., 1900.

Nematodes. Ascaris Lumbricoides.—The round worm common to all countries and to every climate needs but little description here. It is, in its adult form, roughly about the thickness of a lead pencil and from 6 to 10 inches long, the male being decidedly smaller than the female. The normal habitat is the small intestine. Its distribution in China seems to be universal, and from reports gathered from twelve different provinces of the empire we learn that about three-fourths of the general population and a much higher percentage of the children harbour the parasites. It is difficult to determine an average number in the intestines, but it is probably about twenty to thirty worms. It is, however, quite common to find a hundred or more. One case is mentioned[1] where a boy of twelve passed 5,000 worms in less than three years: 600 were got rid of in a single day. Jefferys, Shanghai, reports the case of a baby of eighteen months old who passed eighty-nine worms within a week. Landsborough, Formosa, tells us of a case of intestinal obstruction in a boy in which the intestine was blocked with round worms.

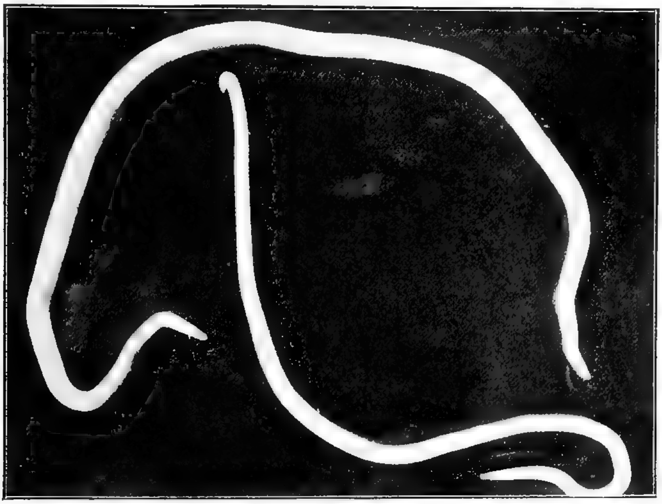

Fig. 60.—Adult male (below) and female (above) Ascaris lumbricoides, 2/3 size. (*By Jefferys.*)

Ascaris, like the majority of the nematode worms, does not require an intermediate host, but the eggs swallowed again by the same or other individuals develop at once in the patient's intestine into the adult form. The egg of ascaris is characteristic and easily seen under the low power

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[1] Allbutts' System of Medicine, Vol. II, Part 2, p. 887.

of the microscope. In size it is about 60μ by 40μ. The eggs, however, vary very considerably in size. In appearance they are a brown colour, varying in shade from light to very dark brown. The colour is due to a bile-stained deposit on the outside of the egg; if this is removed, as it easily may be by a little rough handling, a thick smooth shell still remains, thick enough to show easily a double contour, even under the low powers of the microscope. The egg is unsegmented when passed, but if kept moist and warm gradually develops an embryo in the course of a few weeks to as many months. In addition to these typical eggs, atypical eggs are very frequently observed, rather larger and more oval than the typical ones, containing usually many oil globules, and not developing to a further stage. Logan first described these for China and showed that they were probably unfertilized eggs of normal female worms.[1] Jefferys has shown that they cannot be cultivated to a further stage, and has finally proved the case by finding a pig, with four adult female and no male worms in its intestine, the eggs both in the fæces and in the uteri of the worms being of this type.

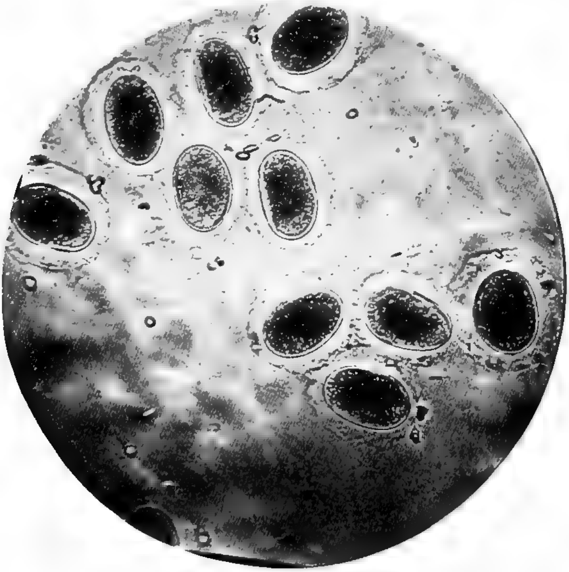

FIG. 61. Fertilized ova of Ascaris lumbricoides from uterus, 1/6 objective. (*By Bell and Sutton, Hongkong.*)

Diagnosis is at once and easily established by microscopic examination, except in the rare case, such as one reported by Jefferys, where only male worms are present in the intestine.

Pathological Results. The worm being so ubiquitous, its presence constantly coincides with other pathological conditions, and many of these have, without any sufficient evidence, been attributed to the presence of the parasite. Again, it has been shown that certain toxic products can be obtained by chopping up and maceration of the worms, but we refuse entirely to consider chopped up and macerated worms to be in any way on a par with living worms in the human intestine. Certain pathological effects, especially in children, are allowed by all; these are a tumefied abdomen with discomfort and sometimes pain, indigestion, and either constipation or diarrhœa, and occasionally blocking of the common bile duct by a worm passing up that canal. Further results not unfrequently attributed to these parasites are convulsions in children, acute abdominal pain, appendicitis, and dysentery.

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[1] *China Medical Journal*, Sept., 1906.

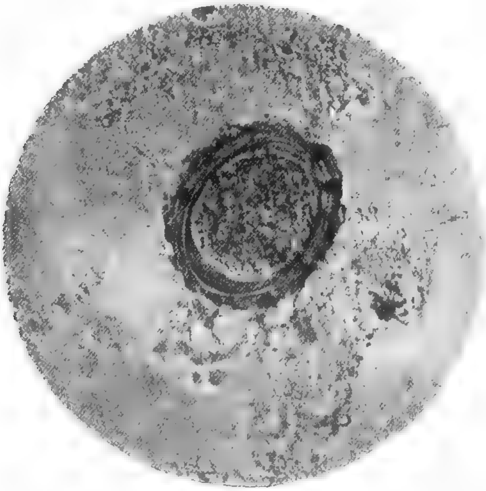


FIG. 62, *A*.—Development of Ascaris lumbricoides embryo.
(*By Bell and Sutton, Hongkong.*)

With regard to convulsions in children, given a child with an unstable cerebral cortex there is no reason why ascarides should not cause a convulsion as much as a meal of pork-pie, and for the same reason that we decline to consider pork-pie the cause of convulsions in children we decline to consider ascarides either. We shall deal with the question of appendicitis when speaking of trichocephalus.

The only reason given for acute abdominal pain and dysentery being a result of ascaris infection is that santonin and castor oil expel the worms and effect a cure in some cases very speedily. Now we have yet to learn of a better treatment for ordinary acute abdominal pain than a good dose of castor oil, and there is no doubt that castor oil and santonin are both excellent drugs for dysentery, we therefore require something a little more definite in the way of proof before we accept such evidence of the pathological effects of the round worm.

Round worms sometimes appear in strange places. They have been found in the abdominal cavity, passed through the bladder and escaped, as in a case of our own, through the sinus of a tuberculous abscess in the thigh. These are probably all associated with some ulceration of the gut. We know of no case where the worm has been proved to break a hole through the healthy intestinal wall.

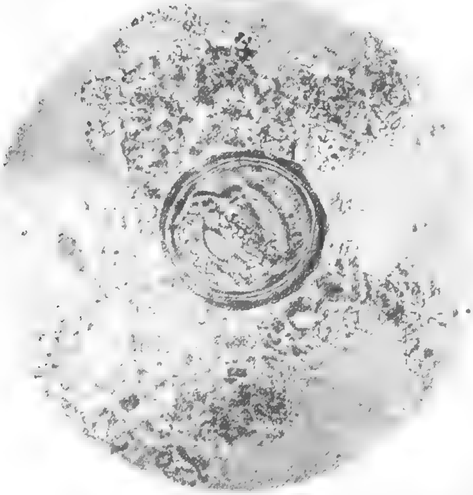


FIG. 62, *B*.—Development of Ascaris lumbricoides embryo.
(*By Bell and Sutton, Hongkong.*)

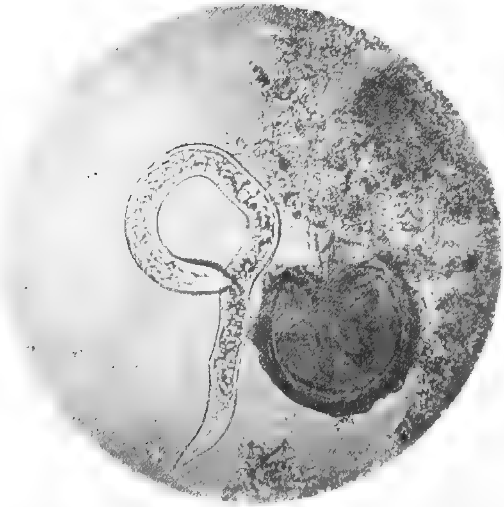


FIG. 62, *C*.—Development of Ascaris lumbricoides embryo.
(*By Bell and Sutton, Hongkong.*)

Treatment. The first essential to proper treatment is diagnosis, and we know no condition where the diagnosis of patients, at least in private or in in-patient hospital practice, is easier than in the case of ascaris infection. And yet it remains a fact that there is probably no condition known where a powerful drug is used so absolutely at random as in this condition. Almost every lay person in China seems to think that Santonin may be as safely administered as a dose of Epsom salts and gives it without stint to the unhappy children committed to his or her charge. We hear nothing of bad results of the drug, at least they escape publication, though some of us from time to time have the misfortune of seeing wholly different complaints such as typhoid fever made very much worse by wholesale administration of santonin. We do not say that santonin should never be given without microscopic examination of the stools, but if so given without the patient continuing under a physician's care, as in the case of hospital out-patients, it should always be given along with a good dose of castor oil, which hurries it through the alimentary canal without giving time for much toxic absorption. We have in this way administered the drug many thousands of times without seeing a single bad result. Whenever possible, however, as in the case of hospital in-patients, a microscopic examination requiring not more than two minutes and easily done by a Chinese assistant should be first undertaken to establish the diagnosis. The alimentary canal should then be emptied by an aperient at night and a dose of santonin, 1 to 5 grains according to age, given in the early morning on an empty stomach followed by a further dose of castor oil some hours later. The patient should be warned that yellow tinted urine and yellow effects of vision will probably result, and in children more seriously toxic symptoms sometimes occur. The dose, if eggs can still be found in the fæces, should be repeated in three days.

The prophylaxis of this condition is the avoidance of native food, especially uncooked food and unboiled or unfiltered water.

Under this head should also be mentioned another form of ascaris probably not reported from China only for want of sufficiently careful examination. It is the ascaris common in dogs and cats, and known as *A. marginata et mystax* or *A. canis.* These worms are smaller and thinner than the average *A. lumbricoides*, and are found often in association. They are sometimes parasitic to man.

Trichocephalus Trichiuris.

(*Dispar.*)

The whip worm is almost as ubiquitous as the ascaris worm, but not by any means as common. We estimate its frequency in China at about 40 per cent. of the population when taken over a large area, but, while found everywhere, its frequency varies considerably in different places.

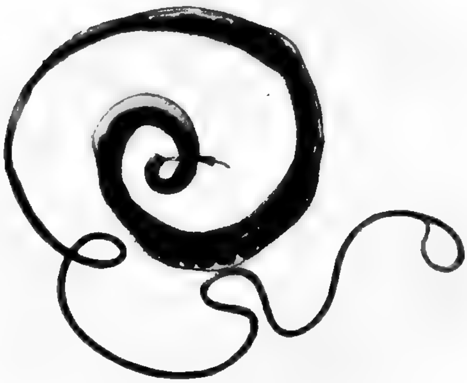


FIG. 63.—Trichocephalus trichiuris. Adult worm magnified several diameters. (*By Bell and Sutton, Hongkong.*)

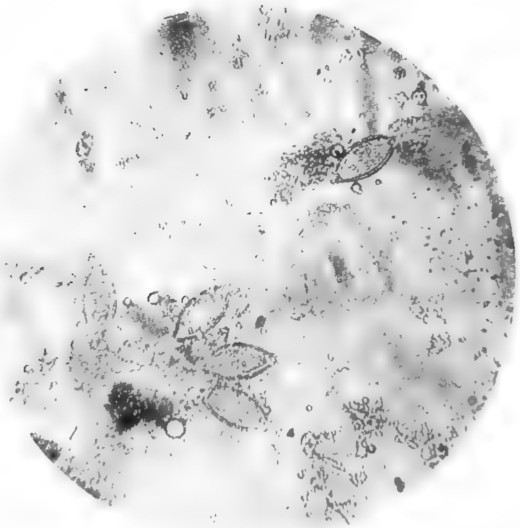


FIG. 64. Ova of Trichocephalus trichiuris, in faeces, 1/6 objective. (*By Bell and Sutton, Hongkong.*)

Its habitat is the cæcum, the lower end of the ileum, and the upper end of the colon.

The worm measures from 40 to 50 mm. (about 2 inches long); it is peculiar in consisting of two parts, an anterior, very thin part, representing the lash of the whip, and a posterior, shorter and thicker portion, representing the stock of the whip. The vagina is large and coiled; only one spicule is present in the male.

The eggs are very typical, being oval, about 50 by 20μ, and showing an opening at each end, plugged with a clear material. They are brown, varying greatly in tint, and smooth-shelled. The embryo develops if the eggs are kept moist, but only after many months. No intermediate host is needed.

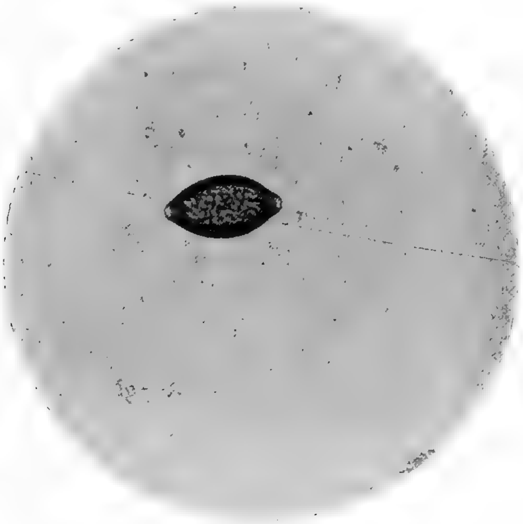


FIG. 65.—Ovum of Trichocephalus trichiuris, ×250. (*By J. Bell, Hongkong.*)

Pathological Effects.—As far as we know there are none. We have ourselves opened a cæcum full of these worms in the course of an ileo-cæcal anastomosis without their presence hindering in the least the normal course of convalescence. From time to time writers with more enthusiasm than experience bring forward these worms as the cause of appendicitis. Suffice it to say that in England, for instance, the worm is comparatively rare, the disease very common. In China the disease is very rare, while this so-called cause is very common.

Treatment.—No drug has been conclusively shown to have any effect in expelling the worm. Possibly betanaphthol may be of some use in this direction.

Oxyuris Vermicularis.

(*Oxyuris Vermicularis.*)

The seat worm is another of the nematodes characterised by its ubiquity. Its habitat is the cæcum, from which it descends to the rectum, and there comes outside of the anus to lay its eggs, with the result that the latter are very rarely seen in a routine examination of the fæces. We are unable to give any idea of the frequency of this worm in China, but our own impression is that it is more frequent among the poor of London than of China. It is a worm common in children and relatively rare in adults. In appearance it resembles a small piece of fine white thread; in size the female is from 10 to 12 mm. (about 1/2 inch) in length, by .5 mm. broad, the male worm being less than half this size. In the male worm the tail is blunt and curled up, the cloaca is terminal and has only one spicule. In the female the tail is pointed and the vagina opens on the ventral side about the middle of the worm. The eggs, $50 \times 20\mu$ are oval but flattened on one side. The shell is composed of three layers. The embryo is already formed though not fully developed when the egg is deposited. No intermediate host is required.

Pathological Effects.—Wandering out of the rectum to lay their eggs they produce a considerable amount of itching of the anus and neighbouring parts.

Treatment.—The worms in the rectum are easily got rid of by enemata, but these must be persisted in every other day for some weeks till all the worms from the cæcum have decended to the rectum. The best injections are salt and water, one ounce to the pint, and infusion of quassia. About five ounces should be used for a child. To prevent reinfection the child should wear strong drawers till the treatment is finished.

Strongyloides intestinalis.

(*Stercoralis. Anguillula Intestinalis.*)

The distribution of **strongyloides intestinalis** in China is not yet fully known, but as in other parts of the world it is very commonly associated with ankylostomum duodenale, it seems probable that, as in the case of the latter worm, the area of distribution may be very wide. Maxwell, Yung-chun, Fokien, reports six cases. Houghton, Wuhu, Anhwei, reports four cases, and we believe we have seen the embryo in a series of fæcal examinations in Tainan, Formosa.

The common habitat of the mature female worm is the duodenum and jejunum. In size it is very minute, about 2 mm. by .035 mm.; it is, however, very easily distinguished under the microscope by the arrangement of its eggs (see Fig. 66) which lie in a string of about five or six near the centre of the body. No males are known. The egg resembles that of *A. duodenale*, but develops rapidly in the intestine, so that before it can be passed in the fæces, the embryo has already escaped and ova are thus very rarely seen in the stool. The embryo closely resembles that of *A. duodenale* from which it can only be distinguished by great care. If the fæces are mixed with fresh water, it rapidly develops, if the temperature be low, into a filariform worm, which if swallowed or allowed to penetrate the skin again resolves itself into the mature form. If, however, the temperature be high the embryos develop into male and female worms outside the body, the male differing from the female in its curled up tail

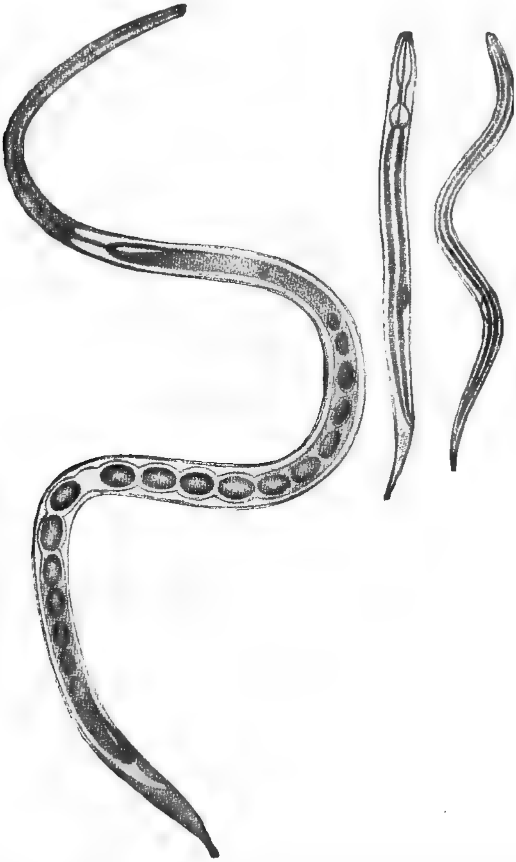


FIG. 66.—Strongyloides intestinalis. On the left a gravid female from human intestine (natural size, 2.5 mm.). In the middle a rhabditiform larva from fresh fæcal matter, ×120; to the right a filariform larva from culture, ×120. *(From Tyson's Practice of Medicine, Braun.)*

and double spicule; these may go on thus to many generations, but eventually develop filariform larvæ capable of again infecting man.

Pathological Effects.—Chronic or acute diarrhœa.

Treatment.—The same as for the ankylostomum worm.

Strongylidæ.

(*Ankylostomum duodenale. Necator americanus.*)

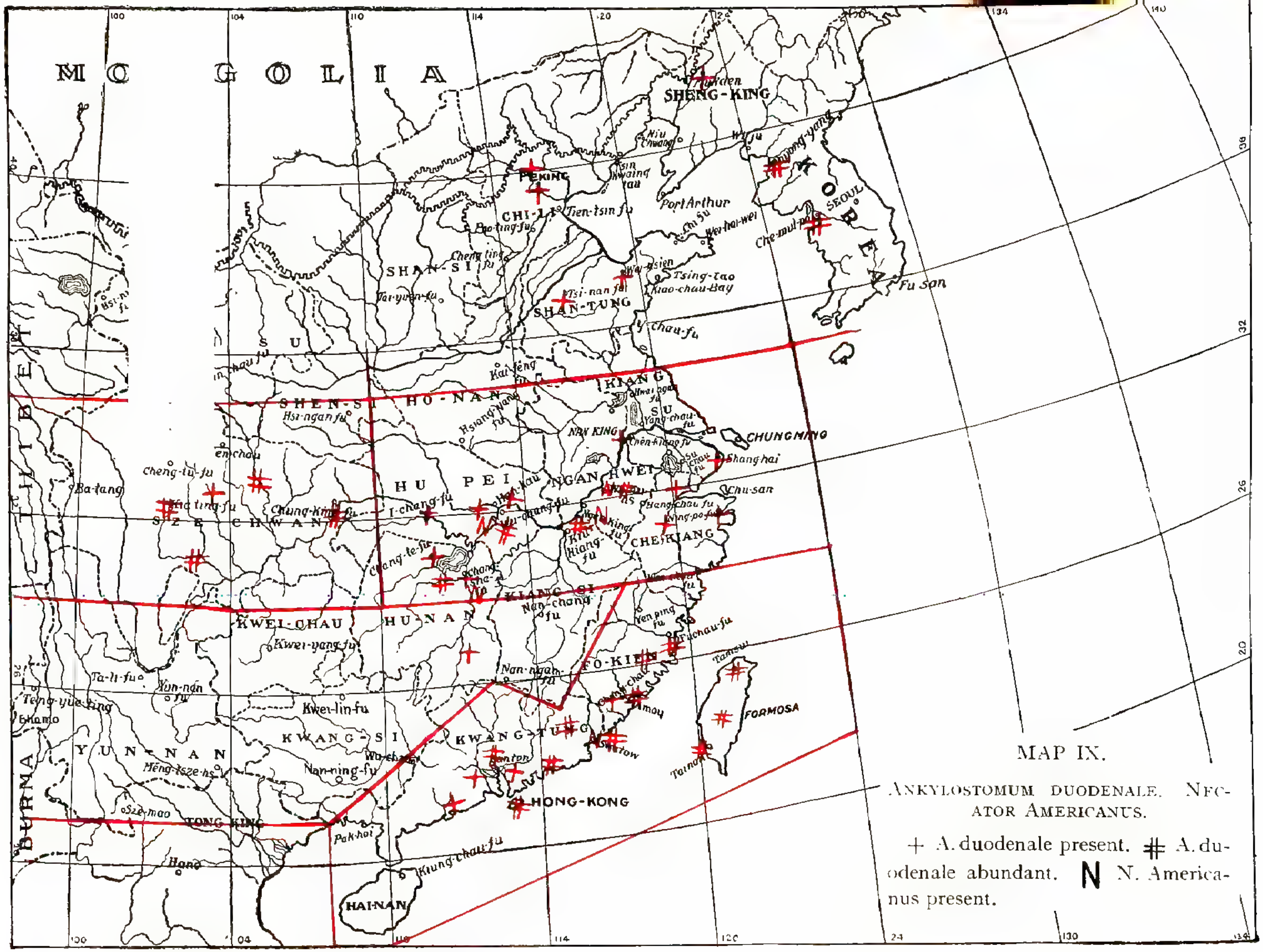
The **distribution** of these worms in China is a matter of great practical importance, being, as they are, one of the most serious factors of disease in the Empire. While there is no doubt of the truth of this statement, it is remarkable that only the last few years have seen any recognition at all of the widespread distribution of the parasite. The importance of the infection was recognised a few years ago by the Medical Missionary Association of China, and it is owing to the efforts of that association alone that our knowledge of the distribution and consequent importance of this form of disease to China has arisen. Though our knowledge of the areas infected by the parasites, and especially the relative frequency of the *Necator americanus*, is still far from complete, we can yet state that the infection with one or other of these worms is extremely widespread through the southern two-thirds of China.

Excluding the four most northern provinces, Kansu, Shensi, Shansi, and Chihli from which reports are wanting or incomplete, we can confidently affirm that the other fourteen provinces are widely infected with the parasite, the general rule being that the further south one travels, the more severe the infection. It is also reported as fairly common from Korea, and is extremely prevalent in Formosa, 44 per cent. in a series of 1,000 male patients.

With regard to the relative frequency of the different worms our information is very unsatisfactory. Whyte, Swatow, reports a mixed infection from that part of the Kwang tung Province. Two reports from Anwhei Province mention the presence of both worms, and one report each from Hunan and Hupeh Province. Otherwise all our reports mention the presence of the *Ankylostomum duodenale* only.

In Formosa we have so far failed to find any evidence of the presence of Necator despite repeated examinations.

The **slight differences** between the two worms will be mentioned below. The general type is the same in both. Length of the male about 8 mm., of the female about 10 to 12 mm. Colour dirty white, neck a little bent on itself with terminal mouth. Caudal extremity of female pointed, of male with a well-marked bursa, and two long fine spicules. The habitat of the adult worm is the duodenum and jejunum. The



MAP IX.

Ankylostomum duodenale. Necator Americanus.

+ A. duodenale present. # A. duodenale abundant. **N** N. Americanus present.

egg is unstained and very thin shelled, indeed so thin shelled that even under the 1/6 inch objective it shows only a single contour, and is thus quite easily distinguished from an ascaris egg from which the rough sheath has been torn off. (See Fig. 55.) The eggs when passed already, as a rule, contain a segmented ovum. The size of the egg is about 60 by 40μ. If kept in a warm place an embryo rapidly develops and in two or three days escapes from its shell. The rhabditiform larva very closely resembles the larva of the *Strongyloides intestinalis* (See Fig. 71), the difference being only able to be detected by careful microscopic examination of the head.

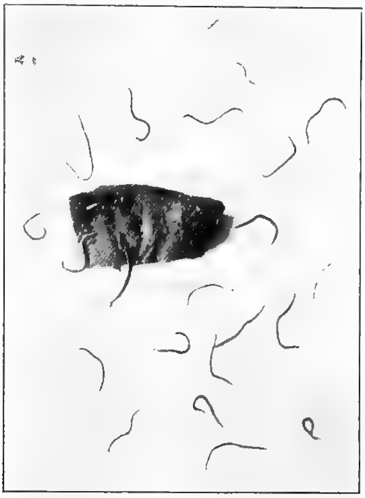


FIG. 67.—Ankylostomum duodenale (life size). Shows some worms adherent to the intestinal mucosa and some free. (*By Jefferys.*)

It should be remembered, however, that while the *A. duodenale* larva never develops inside the bowel, or in pure fæces when passed, that of *S. intestinalis* always escapes from the ovum before the stool is passed.

The main differences between *A. duodenale* and *N. americanus* are shown in figure 70. The armed buccal plate of *A. duodenale* as against the smooth mouth of *N. americanus;* the excessive bend of the neck of necator; the broad spread-out, umbrella-shaped sucker of the ankylostomum compared with the sucker of necator flattened on one side; and the long pointed spicules of ankylostomum compared with the fish-hook-ended spicules of necator. These differences allow a diagnosis to be quite easily arrived at. The eggs of necator are slightly larger than than those of ankylostomum.

Pathological Effects.—Ankylostomiasis.—Not all who harbour these worms suffer from the disease, ankylostomiasis. In Formosa nearly 40 per cent. of the inhabitants harbour the parasite, but probably not more than 20 per cent. of the infected persons show any ill effects. It is a little difficult to account for this, especially as some who harbour large numbers of worms appear to suffer little, while others from whom only a small number can be obtained appear to be very seriously affected. While individual idiosyncrasy has no doubt something to do with this, we doubt if it is sufficient explanation. Our own view of the matter is that

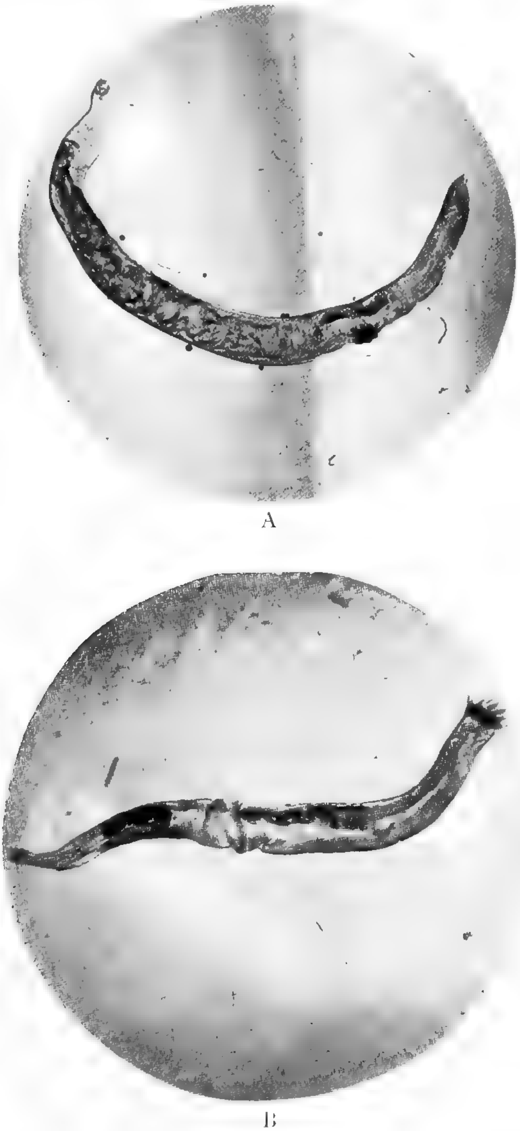


Fig. 68. Ankylostomum duodenale. Adult worms magnified. *A*, Female; *B*, male. (*By Bell and Sutton, Hongkong.*)

while a single infection even with large numbers of the parasites is insufficient to cause serious symptoms, the repeated infection with small numbers of worms will eventually in all cases cause the symptoms of ankylostomiasis. This is borne out by the fact that those whose employment renders them liable to constant reinfection invariably suffer from the disease in the long run. We have no evidence as to the relative toxicity of the two worms. Some digestive disturbance is probably caused by the parasite, but when we refer to ankylostomiasis we think of a definite

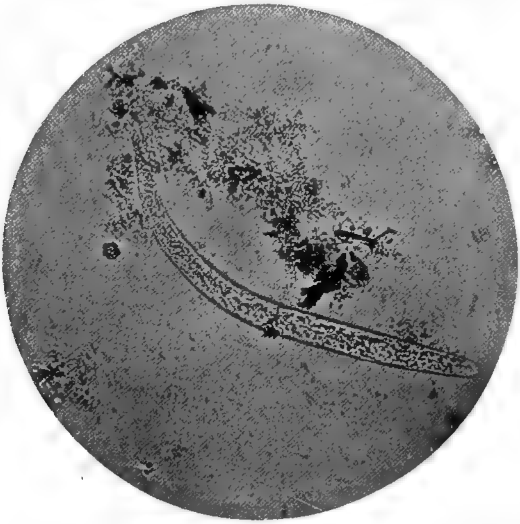


Fig. 69.—Embryo of Ankylostomum duodenale, ×250. (*By J. Bell, Hongkong.*)

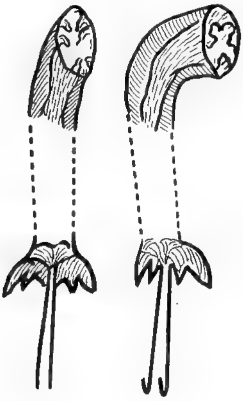


Fig. 70.

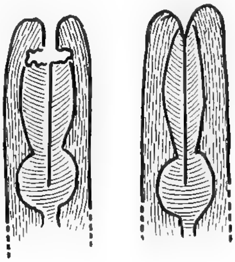


Fig. 71.

Fig. 70.—Diagrammatic representation of Ankylostomum duodenale on left, and Necator americanus on the right. (*By Maxwell.*)

Fig. 71.—Head of larval form of Ankylostomum on the right and Strongyloides on the left. (*By Maxwell.*)

clinical entity, the overshadowing symptom of which is anemia and its effects.

Clinical Picture. The patient seriously affected by ankylostomiasis is usually a man. Anemia is marked if not extreme, the conjunctiva often appearing almost bloodless. Accompanying the anemia is a yellow earthy condition of the skin, very closely resembling that of malarial cachexia, with which it is constantly confounded. As a result of the anemia, in extreme cases there is œdema of the legs, breathlessness, and general anasarca, with a tendency to hæmorrhage especially from the nose.

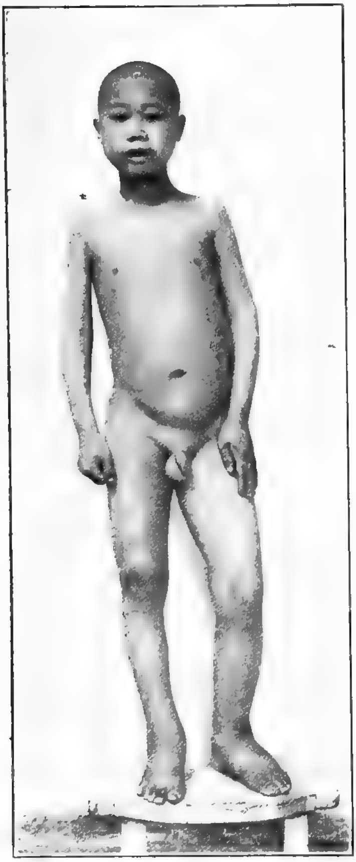


FIG. 72. Case of ankylostomiasis and filariasis. Extreme anæmia. No benefit after ankylostomes were removed in great numbers by eucalyptus. Right leg swelled after the eucalyptus treatment and on examination of blood at night, filariæ were found abundantly. Death. (*Notes, case and photo by J. A Thomson, Hankow.*)

The blood picture in ankylostomiasis is one approaching, sometimes very closely, that of pernicious anemia. We are aware that often a very different type of blood picture, viz., that of chlorosis, is given, but in our own experience in Formosa, which has been a very considerable one, the type in advanced cases has always resembled that of pernicious anemia.

The question is, how does this anemia arise? Two theories have been brought forward; that the anemia is the result of bleeding from the punctures made by the worm in the duodenum, or that it is caused by the absorption of toxins produced by the worm.

Probably both theories are true. Undoubtedly the *A. duodenale* sucks blood: we have ourselves seen the worm distended with blood; further, it produces an anti-coagulation secretion which would aid in the loss of blood from the punctures. Under the microscope, on the other hand, the *N. americanus* hardly possesses an armaclature sufficiently sharp to allow it to draw blood, and in the case of necator infection the result must be solely from absorption of toxins, in *A. duodenale* probably from both.

Source of Infection. This may be either by the mouth, or through the unbroken skin. The uses of human manure in agriculture render the farming classes very liable to this latter source of infection. The stools and urine passed into private receptacles, or public conveniences, are carried by the farmers in tubs to special storage pits; the process of carrying, as may be imagined, is a filthy one, and involves much fouling of the person. Once placed in the storage pits, it is probable that the ankylostomum larvæ are destroyed by natural processes as the manure is left to ripen. To the ordinary farmer, therefore, the risks of infection through the skin, though considerable, are not as great as in another class we shall name. We find in Formosa that about 50 per cent. of the farming classes (males) are infected. The full effect of the use of human manure is, however, felt by the vegetable and flower gardeners. These men use the manure in a fresh form and pour it on the ground from buckets with large spouts, the legs of the workers being constantly splashed by the manure. In this class of men, infection is extreme, practically 100 per cent. harbouring the worm, and nearly all suffering from the disease. There is probably no condition in China, certainly none that we have ourselves met with, that corresponds at all with the "ground itch" reported as occurring in some countries as a result of infection through the skin of the legs.

Diagnosis.—This is very easy by the microscope with a little practice. Until quite accustomed to the search, the 1/6 objective will be needed to confirm the diagnosis. *Every* case of anemia in an ankylostomum-infected region should have the stools examined. With a little practice a diagnosis can be arrived at in two or three minutes or trusted to an experienced Chinese assistant.

Treatment.—A number of drugs have been used for expelling the worm; only four can be recommended—thymol, eucalyptus, extract of filix mas, and betanaphthol.

The latter should have the first place as being almost non-toxic. **Betanaphthol** should be given in capsules of grs. xv on an empty stomach in the morning, the alimentary canal having been emptied by a purge the night before. Four such capsules should be given at intervals of one-half an hour, and followed by a dose of castor oil two hours after the last. The stools should be examined again a few days later, and if eggs are still present, a second and, if necessary, a third course should be given.

Thymol is a very toxic drug, but sometimes acts more effectively than betanapthol. The alimentary canal should be emptied as before, the drug given in capsules of grs. xxx for an adult, every hour for three doses, followed by a castor-oil purge two hours later. While the thymol is exhibited, all alcohol and drugs containing chloroform, ether, glycerine and alkalies must be absolutely prohibited or toxic symptoms will ensue. The patient should be kept lying down.

Oil of eucalyptus is less unpleasant and not so toxic as thymol It may be given in the morning after the same preparation of the patient, in the following form:

Oil of eucalyptus,	♏xv.
Chloroform,	♏xxv.
Castor oil,	ʒv.

Repeat in one-half hour's time.

Extract of filix mas to be effective must be used fresh.

Trichina Spiralis.

A short mention must be made of this nematode parasite of man and animals. No cases have been yet reported from China of human infection, but as Manson has shown that Chinese pigs suffer from the parasite in roughly the same proportion as pigs in other countries, it is likely that the lack of reports is rather owing to faulty diagnosis than absence of cases.

The male worm measures 1.5 mm. by .04 mm. The female 3 to 4 mm. by .06 mm. Infection usually takes place by eating pork containing the encysted parasites. They escape in the stomach, and enter the duodenum and jejunum where, after copulation, the males die off. The females then bore through the mucous membrane and penetrate into the lymph spaces, where they deposit their young, which are carried in the lymph stream to the blood-vessels and thus all over the body. In the voluntary muscles they leave the capillaries and establish themselves between the muscle fibres where they become encysted. The invasion of the muscles causes pain, and inflammation with fever followed by muscular contracture. They may also cause diarrhœa and abdominal pain, and in very severe cases death.[1]

Treatment.—None of any use except to get rid of the adult worms.

Gordiacea.

These worms are not in the true sense parasitic to man. They are long and filariform, and live free in brooks and pools. They may be swallowed with the drinking water, in which case they are said to be usually vomited up. Beyond causing the stomach irritation necessary for their expulsion, they have no pathological effects on man.

The only case that we have heard of from China was reported by Maxell, Yung-chun, Fokien. In his case a live worm belonging to this class was passed per anum by a child of twenty months.

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[1] For differential diagnosis see Nephritis, Chapter XIX.

Trematodes.

(*Fasciolopsis buski.*)

This, the **largest of the trematode worms** affecting man, has, owing to the work of the China Medical Missionary Association, come lately to the fore, and much discussion has arisen as to the question of whether the worms formerly included under this name should not now be further subdivided. To that question we shall refer later. For the present, to deal with the general distribution of this type in China. The first specimens from China were found by Kerr, in Canton, and they have since been reported from the same province by Whyte, Swatow, and Heanley, Hongkong. These are the only places in South China where the worm has been found in man. Goddard,[1] Shaoshing, Chekiang, reported cases from that region, and since then considerable interest has been roused in these parasites with the result that they have been further reported from Ningpo, Hangchow, and Shanghai, two cases; and I-yang, Hunan, one case.

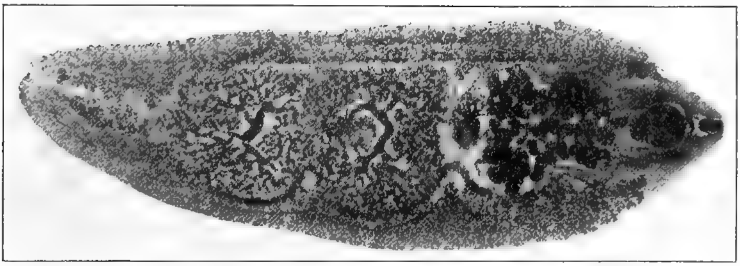

FIG. 73.—Fasciolopsis buski, × 2. Cleared in glycerin. (*By Maxwell.*)

Fasciolopsis buski is reported from the following provinces and stations:

Hongkong.
Kwang-tung, Canton, Swatow.
Chekiang, Ningpo, Shao-hsing (plentiful), also neighbouring villages.
Kiang-su, Shanghai.
Hunan, I-yang-hsien.

It would seem, therefore, that the infection, though a rare one in man, is much more widespread than was formerly believed to be the case. The worm is found with considerable frequency in some of the lower animals, especially pigs. An excellent photograph is given here, from which the main features of its anatomy may be easily made out. The average size of the worm is about 35 mm. long, by 12 mm. broad. The body is roughly oval with only a suggestion of a head cone. The oval sucker is close to the anterior end of the body, and the ventral sucker almost immediately behind it. There is a large well-marked pharynx, the intestinal canals extend to the posterior end of the body in very wavy lines, but unbranched. The ovary is branched and situated in front, and to the right (?) of the transverse vitelline duct. The testes are behind this, much branched and placed antero-posteriorly. The uterus distended with eggs is shown extending forward in large irregular coils, and the genital pore opens immediately in front of the ventral sucker. The vitelline glands are well marked, highly branched, and extend from opposite the ventral sucker to the posterior end of the body, where they

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[1] *China Medical Journal*, 1907, p. 195.

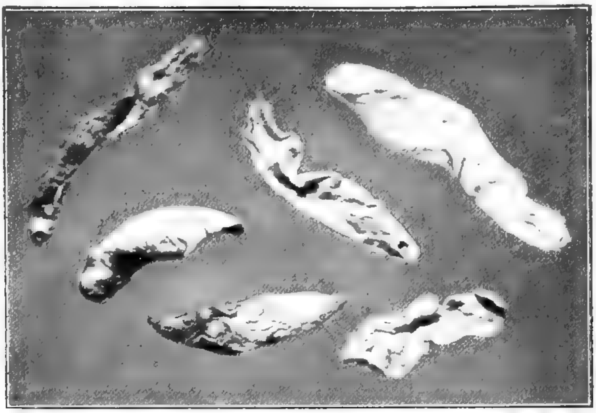

FIG. 74. Adult Fasciolopsis buski (life size). Slightly shrunken by spirits. (*By Jefferys.*)

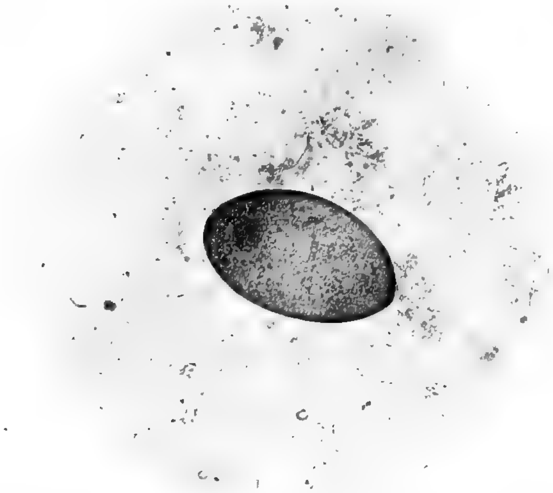

FIG. 75. Ovum of Fasciolopsis buski, 1/6 objective. (*By Bell and Sutton, Hongkong.*)

approximate without actually joining each other. The eggs measure .12 by .08 mm., have a thin shell with a very small operculum and granular contents. They are nearly colourless. The habitat of the worm is the small intestine in man.

The **pathological effects** as given by Goddard[1] are:

1. Moderate diarrhœa, occurring intermittently or continuously over a period of months or years. 2. Wasting. 3. Anemia. 4. Debility, and 5. In children, protuberant abdomen.

In the later stages of the disease the skin becomes harsh and dry, the diarrhœa may become almost continuous, and prostration extreme. In ordinary cases the appetite remains good, but anorexia, nausea, and even vomiting may occur. Dizziness, dyspnœa on slight exertion, a gnawing sensation within the abdomen, blood from the rectum, pain in the right hypochondrium, and sometimes constipation are among the less common symptoms noted.

Goddard then goes on to describe a case so remarkable that we give it here in his own words.

> "One case showed a fæcal fistula in the region of the navel—a girl eleven years of age, who had been losing weight and strength for about two years. Some six months before I saw her she had noticed a small swelling at the navel, which was treated with a plaster, and soon discharged first pus and later fæces, semi-liquid and without much odour. Through this fistula she had discharged at various times some fifty flukes, alive. Shortly before they appeared each time she complained of a gnawing sensation within. She was given a vermifuge and passed several flukes; some by the fistula, which were alive and of the ordinary size and shape, and others by the anus, which were already dead and considerably elongated. This case, together with the fact that living flukes are not infrequently vomited, seems to establish as the habitat of the parasite the upper portion of the small intestine."

Treatment.—As for ankylostomiasis.

C. M. S. Hospital, Ningpo, Sept. 24, 1908.

My Dear Doctor:

As you have been in correspondence with an American expert on the subject of liver flukes, I am sending you the measurements of the "worms" I got from a boy of fifteen from the Shao-shing-fu district: he is a Ningpo boy, working the last twelve months in Siao-saen, which I understand is not far from Shao-shing. Quite well in Ningpo, but gradually getting worse after six months' residence, until he came back to Ningpo and to this hospital. History of few worms vomited; ova found in fæces in numbers; exact measurements average $.135\mu \times .085\mu$, thus almost exactly the measurements of *Fasciola hepatica* or *Fasciolopsis buski*. According to the latest edition of Allbutt's Tropical Medicine (pp. 856 and 854) the measurements are, respectively:

Ova, Fasc. hepatica,	0.13 ×0.08
Ova, Fasc. buski,	0.125×0.077
Ova, "case in question,"	0 135×0 085

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[1] *China Medical Journal*, 1909, p. 388.

The measurements of the *parasites* in the same order are as follows:

Fasciola hepatica,	20 to 30 mm	× 8 to 13 mm.
Fasciolopsis buski,	24 to 37 mm.	× 5.5 to 12 mm.
"Case in question,"	29 to 42 mm.	× 9 to 16 mm.

I could not demonstrate any operculum in the ova, but this is always difficult to gather.

The appearance of the parasites did not give me much information, though the ventral sucker was easily seen. One of the most gratifying features of the case was the effect of thymol in transforming the lad from a water-logged wreck, unable to walk or do anything more than lie in a dyspnœic condition, into an active member of society. He insists he can hear the parasites "crying out" within him, or rather he did so: I trust they have ceased to cry in their present "spirituous" condition. I got 113 after the first 45 grains of thymol, after I had given him extract of male fern in large doses without the slightest result. I had the same experience a couple of years ago with a similar case who gave a history of vomiting typical parasites. I think

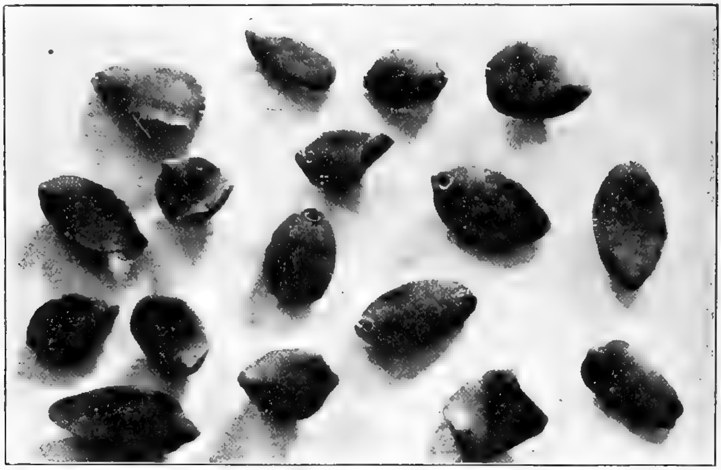

FIG. 76.—Fasciolopsis rathouisi, Ward. (Life size.) Specimens of F. W. Goddard, Shaoshing. (*By Jefferys.*)

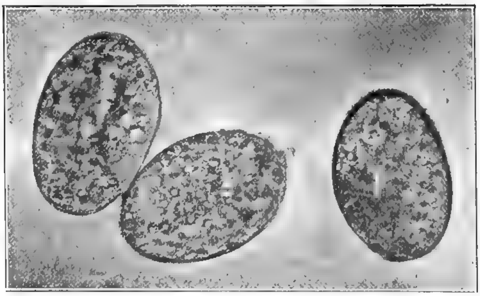

FIG. 77. Ova of Fasciolopsis goddardi, Ward, .08× 13 mm., 1/6 objective. (*By Jefferys.*)

my experience of only two cases has already taught me *to try thymol first.* Now I wonder how you preserved your "worms." I used equal parts rect. spirit, glycerine and water, and my first 113 became an amorphous mass, to my disappointment.

The last few I got I put into weak alcohol, and the shrunken remains do not give one any idea of their original condition.

I am inclined to think it is *F. buski* and am desirous of hearing your opinion.

ARTHUR F. COLE.

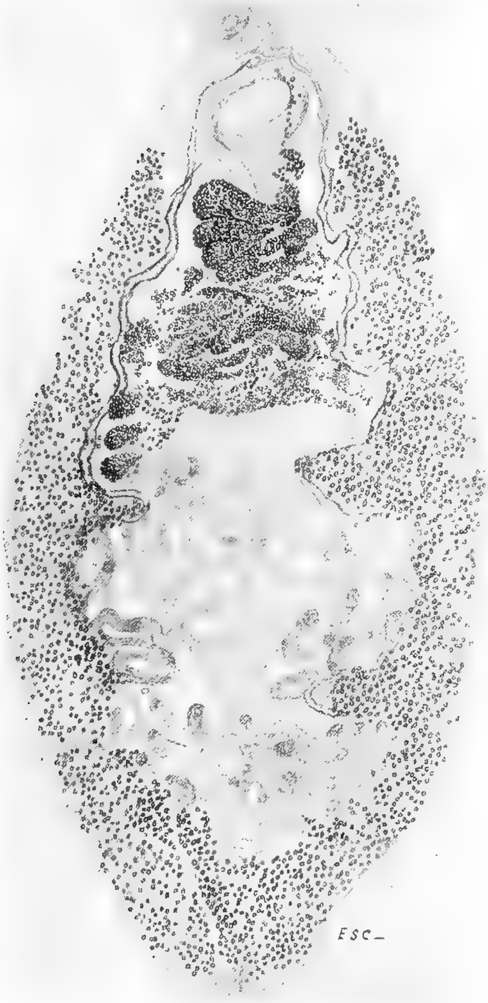

FIG. 78.—Fasciolopsis goddardi. Original drawing by H. B. Ward, Univ. of Illinois.

Varieties.—Perhaps the most interesting question at present concerning these worms is whether they are all to be included under one species or not. In older works on this type of worm a species known as *Fasciolopsis rathouisi* was always mentioned. The type was first described by Poirier, from China; but it has lately been shown by Odhner[1] that it is practically certain that Poirier was mistaken in his original description of the specimen he had to deal with, and it was in fact nothing but a contracted form of *Fasciolopsis buski.* The specimens that have come to hand since the China Medical Missionary Association began its inquiries into these parasites can roughly be divided into large and small worms of this general type, and the question that has arisen is: Do these two naked eye types really represent two or more species? Ward, of Illinois,[2] argues that they do, indeed he divides the worms into three species, the other two being named *F. rathouisi* and *F. goddardi.* We are not quite clear that he makes out a sufficiently good case for the separating of the type into three species. Apart from this we think it a great pity to use a discredited name like Rathouisi and apply it to a type wholly different from that described by its first author. If a new species can be rightly described, then it should have a new name. Ward's differences, however, relate almost entirely to size or are so minor in character as to make one hesitate to acknowledge a new species on such slender terms. The question is still *sub judice*, and we do not wish to express a strong opinion on one side or the other. Differences, too, exist among the large form universally acknowledged as *F. buski*. Thus the South China variety has cuticular spines on the anterior part of the body, and is a more fleshy worm than the specimens from Mid-China in which, too, the spines are absent.

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[1] Archives de Parasitologie de Paris, May, 1909.

[2] *China Medical Journal*, January, 1910.

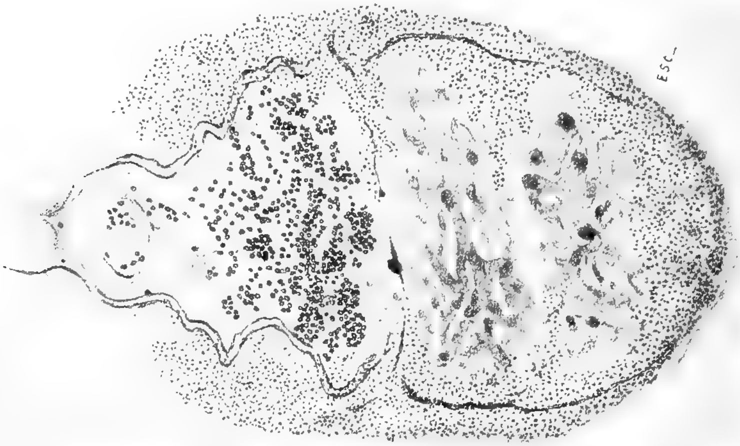

FIG. 79 Fasciolopsis rathouisi Original drawing by H. B. Ward, Univ. of Illinois.

Clonorchis Sinensis.

(*Distoma Sinense.*)

The **Clonorchis sinensis** is a small trematode worm, common probably in many parts of China, though we still lack a good deal of evidence on this point. It is very common in Korea, the Swatow region, and Hongkong, but appears to be absent from Formosa and the neighbouring coastline of Fokien. The worm has also been reported from Shanghai and Hankow.

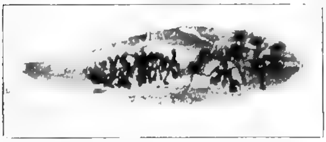

FIG. 80. Clonorchis sinensis, × 2. Cleared in glycerin. (*By Maxwell.*)

Clonorchis sinensis is reported from the following provinces and stations:

Korea, Che-mul-po.
Kiang-su, Shanghai.
Hu-pei, Hankow.
Kwang-tung, Swatow.
Hongkong.

The *Clonorchis sinensis* is about 14 mm. in length, by about 4 mm. in breadth. The oral sucker is close to the anterior end of the body, the ventral sucker at the junction of the anterior one-fifth with the posterior four-fifths. At this point there is a slight constriction in the body of the worm. The intestinal canals are nearly straight and do not reach quite to the posterior extremity. The vitelline glands occupy the second and third fifths of the body exterior to the intestinal canals. The ovary is oval and not branched; the uterus is very convoluted and is distended with eggs, the genital pore lying just in front of the ventral sucker. The testes are markedly dendritic, the branches crossing the intestinal canals;

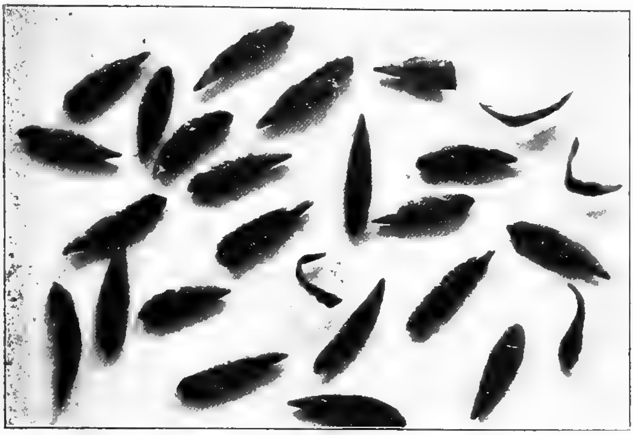

FIG. 81.—Adult Clonorchis sinensis (life size). From the human gall-bladder. (*By Jefferys.*)

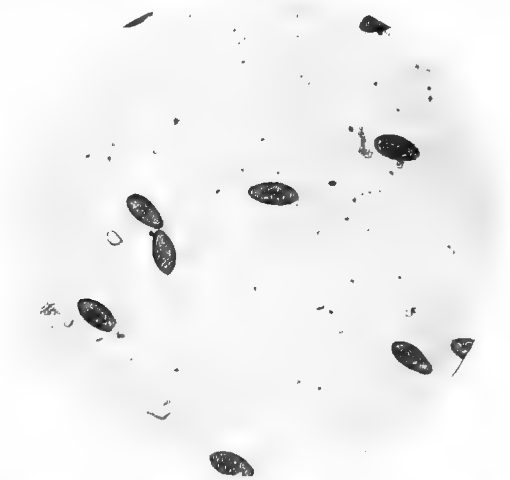

FIG. 82. Ova of Clonorchis sinensis, 1/6 objective. (*By Bell and Sutton, Hongkong.*)

they are placed antero-posteriorly. The eggs are oval and flattened at one end, where there is a small, well-marked operculum; at the opposite extremity there is usually a thickened point or spine. They measure .027 by .015 m.m. The egg contains a ciliated myracidium. The further history is unknown.

Pathological Effects.—The worm inhabits the bile channels in the liver, causing considerable dilatation of these. It is said to give rise to jaundice and diarrhœa. Boone, Shanghai, reports a case of death from obstructive jaundice and diarrhœa associated with the presence of these parasites. On the other hand it is an undoubted fact that individuals may harbour very large numbers of these worms without their giving rise to any pathological symptoms.

Baelz,[1] who described the parasite from Japan under the name of *Distoma hepatica*, considered that there were two forms which he named *D. hepatica inocuum* and *D. hepatica perniciosum.* Later,[2] however, he retracted his opinion that there were two forms. Loos is also of the opinion that there are two forms, but he has brought forward very little evidence to support this view.

Jefferys, Shanghai, has forwarded to us a specimen which he considers to be one of the pernicious variety. It differs from the specimens of the ordinary *C. sinensis* in our possession in the following points: The worm is decidedly smaller, measuring only 10 mm. by 2.5 mm.; the contraction opposite the ventral sucker is much more marked; the testes are very much less branched, indeed this is the most striking difference between the two worms.

We are not clear that these differences are sufficient to be considered specific, and we prefer to regard the question as still *sub judice.*

Cestodes.

As we have already shown, comparatively little is known of the distribution of the trematode worms in China, and this applies equally to the cestodes. It is strange that this should be so, as these worms are the largest human parasites known and are easy of diagnosis, but the fact remains as we have stated. What we do know of their presence in China is that they are relatively common in the north and rare in the south, with the striking exception of Yunnan, where apparently they are found with great frequency. In Korea they are very common, and are plentiful in Manchuria. They are present and probably common in Shansi, Shensi, and Chihli. They are rare, possibly found only in imported cases in Mid-China, and the same applies to South China, except

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[1] I. M. C. Medical Reports, 1884, Vol. I, p. 44.

[2] I. M. C. Medical Reports, 1884, Vol. II, p. 60.

Yunnan. We have never met with a case in Formosa, and six reporters from Kwang-tung Province tell the same story.

The varieties of cestodes to be found in man in China have never been properly investigated. The *pseudophyllidiæ* are represented by dibothriocephalus latus, one report; sparganum mansoni, one report; the cyclophyllidiæ by the tænia group only.

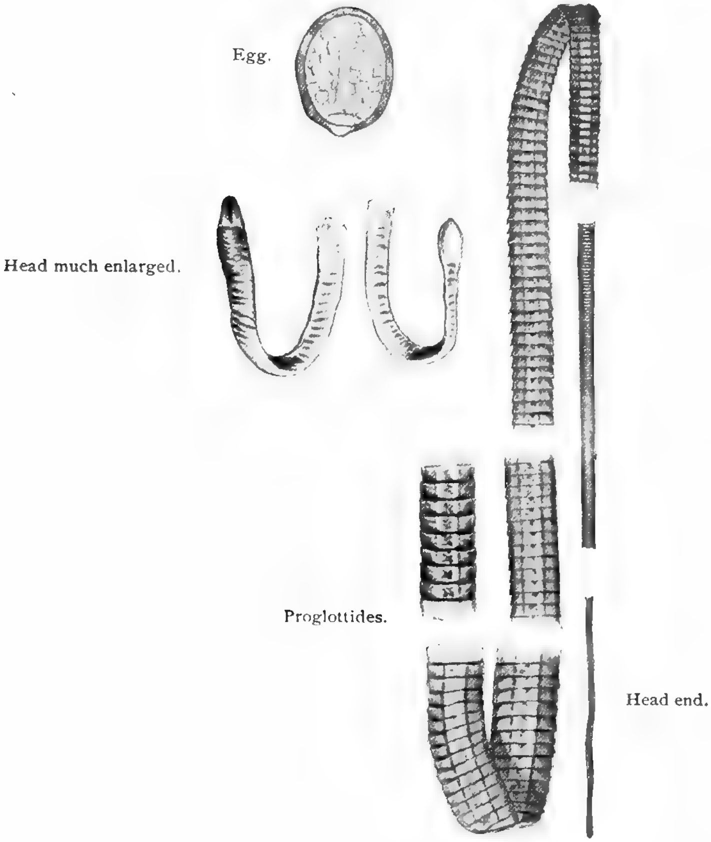


Fig. 83.—Dibothriocephalus latus, head and egg. (*From Hemmeter's Diseases of the Intestines.*)

Pseudophyllidæ.

Dibothriocephalus latus.—This is one of the largest of the tape worms, measuring from 5 to 30 feet in length. The head is almond-shaped and flattened, and has two suctorial grooves. There are three to four thousand segments or proglottides, the ripe proglottides being slightly broader than they are long. Each ripe segment has numerous testes placed laterally and dorsally. The uterus forms a number of transverse convolutions. The genital pore is placed on the ventral surface of the segment. The segmented eggs are large, measuring .070 by .045 mm., are brownish in colour and have a small operculum. After several weeks in water they produce a ciliated oncosphere. The secondary host is one of the fresh-water fishes.

Sparganum mansoni.—This is the larval form of an unknown species of the dibothriocephalidæ. It was first found by Manson in a port-mortem on a Chinese at Amoy. The parasites appeared as white ribbon-like strings under the peritoneum, and one specimen was found free in the pleura. They had no definite structure, no head and no sexual organs. They measured about 30 mm. long and 5 mm. broad. The further history of this parasite is unknown and it has not been again described from China, at least in man. (See Fig. 95.)

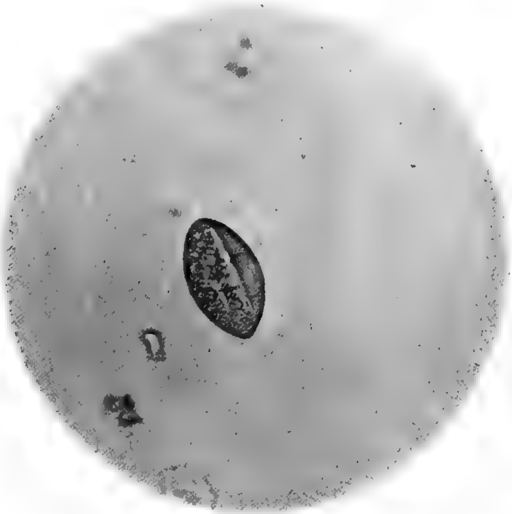


FIG. 84.—Ovum of Bothriocephalus latus, × 250. (*By J. Bell, Hongkong.*)

Cyclophyllidiæ.

(*Tænidæ.*)

Tænia saginata. This is perhaps the commonest and the most widely distributed of the tapeworms. In its mature form it inhabits only the alimentary canal of man. It measures on an average about 30 feet long. Like all tapeworms, it consists of a scolex or head, and neck and segments or proglottides, the mature segments or distal ones measuring about three-fourths of an inch long by one-half inch broad. The scolex is about 2 mm. in diameter and has four well-marked suckers but no hooklets or rostellum. The proglottides, when mature, have a uterus filling the segment, with lateral offshoots which branch dichotomously. The genital pore is single, lateral, and irregularly on either side of the segment.

The egg is shown in figure 85. The intermediate host is the ox, the cystic stage of the worm, the cysticercus bovis, being passed in the muscles of that animal, and reaching man through raw or imperfectly cooked beef. The ripe proglottides usually escape singly in the stools, and as the eggs are rarely set free before the escape of the proglottides they are seldom seen in the stools.

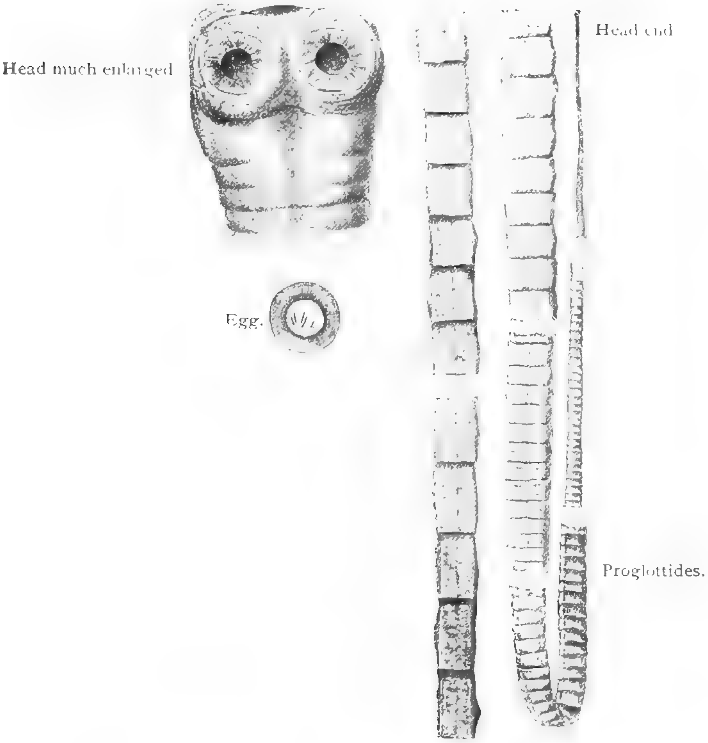
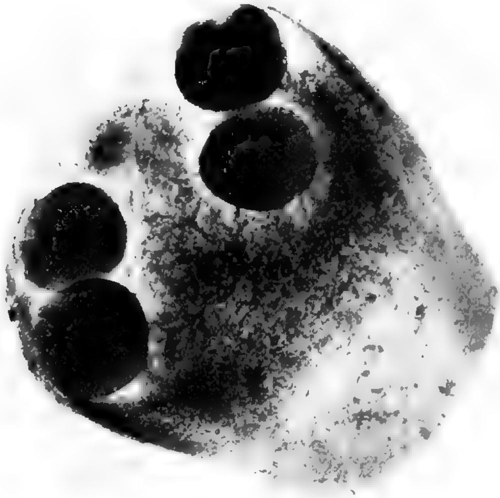


FIG. 85.—Tænia saginata. (*From Hemmeter's Diseases of the Intestines.*)

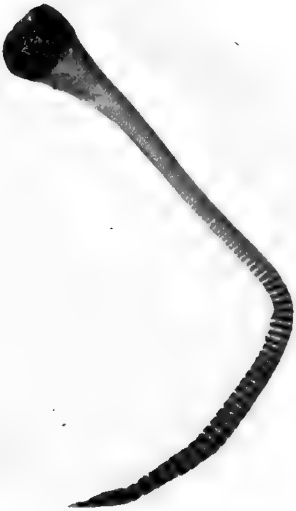
Tænia solium.—This parasite is smaller than *T. saginata*, averaging only about 6 feet in length. The mature worm inhabits the alimentary canal of man and animals.

The scolex has four large suckers, but differs from *T. saginata* in having a short rostellum with a double row of twenty-six to twenty-eight hooklets. *T. solium* also differs in the ripe proglottides, being smaller, about one-half inch long by one-fourth inch broad, and the uterus having fewer divisions, averaging eight branches on one side of the genital pore and ten on the other. The genital pore as in *T. saginata* is irregularly on alternate sides. The eggs closely resemble those of *T. saginata*. The inter-



A

FIG. 86, *A*.—Head of Tænia saginata, greatly magnified. Case of F. D. Lumley, R.N., Weihaiwei. (*Photo by Bell and Sutton, Hongkong*.)



B

FIG. 86, *B*.—Same with neck segments.

mediate host is the pig, and the parasitic form in it is the well-known cysticercus cellulosa. The cysticercus of *T. solium* may invade the muscles or other tissues of man. The proglottides appear in the stools singly or in chains.

Pathological Effects of Tænia Infection.—In many cases the presence of mature tapeworms gives rise to little or no inconvenience to the host. They often, however, cause dyspeptic symptoms, colic, and even profound anemia. The *T. saginata* seems to be the least harmful of these worms. The blood, as in all cases of worm infection, shows some eosinophilia.

The cysticercus stage, if invading man, may cause much more serious results, the symptoms depending on the organ affected; it is specially serious if invading brain or eye.

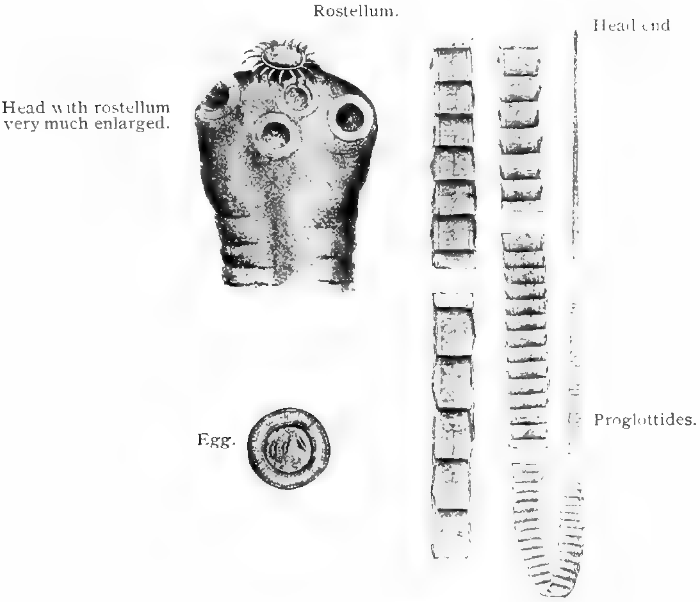


FIG. 87.—Tænia solium. (*From Hemmeter's Diseases of the Intestines.*)

Treatment.—By far the best and most reliable vermifuge for the tæniæ is filix mas. The patient should be prepared by a very light evening meal and a good purge to empty the bowel, the drug being given in the form of Ext. Filicis Liquidum in three doses of ʒss each at intervals of half an hour in milk or a capsule the following morning on an empty stomach. The last dose is followed by a large dose of castor oil. The result must be carefully examined for the head of the worm, as the treatment cannot be considered successful till this has been expelled.

Tænia Echinococcus.

This worm, differing so greatly as it does in its form and its pathological effects from those mentioned before, deserves a short description to itself. We shall mention it very briefly as few cases are described from China, and it is still doubtful if these are not imported from outside.

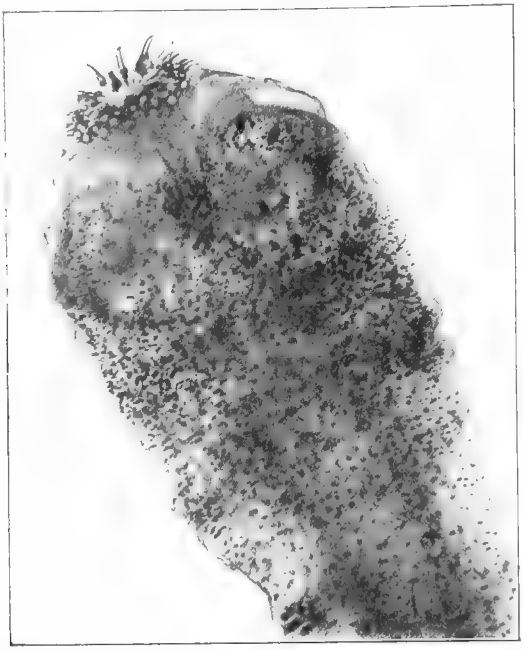


Fig. 88. Head of Tænia solium. Greatly magnified. (*By Maxwell.*)

Echinococcus disease is reported from the following provinces and stations:

Fokien,	Fu-chan-fu,	one case.
Chi-li,	Tung-chan,	three cases.
Kiang-su,	Shanghai,	one case in a Filipino.

The worm measures about 5 mm. in length by .5 mm. in breadth. The head has a rostellum with a double row of twenty-five to fifty hooklets. There are only three or four segments. The parasite lives in the small intestine of dogs, wolves, and jackals, the cysticercus stage is passed in man and animals. The cysticercus form, hydatid cyst, is specially common in the liver, but occasionally may be found in the lung kidney, brain, etc. Large cysts are formed which often contain numbers of smaller daughter cysts, and either these or the mother cysts may or may not contain scolices. For further description our readers must refer to one of the standard works of surgery.

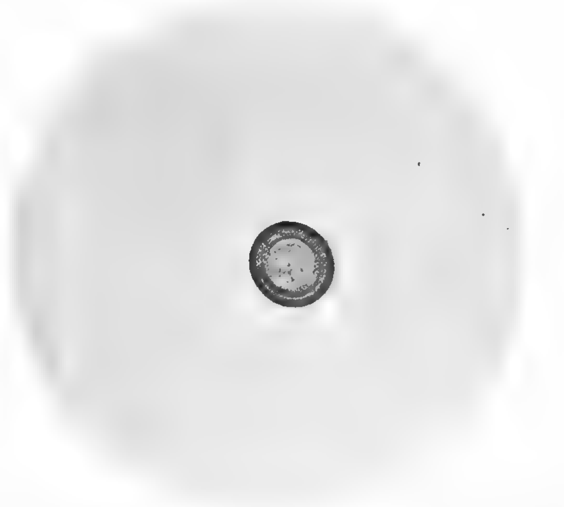


FIG. 89.—Ovum of Tænia solium, × 250. (*By J. Bell, Hongkong*

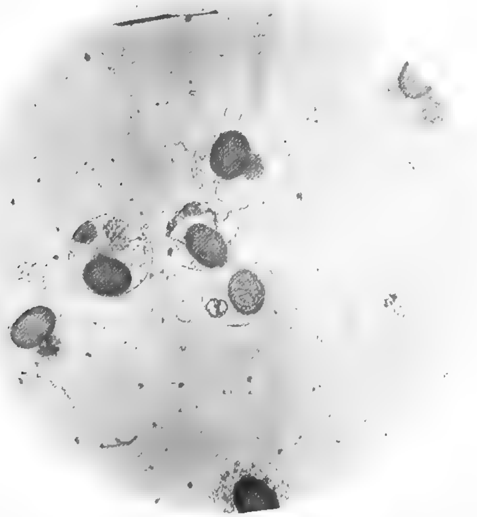


FIG. 90.—Ova of Tænia solium, 1/6 objective. (*By Bell and Sutton, Hongkong*)

Myiasis.

Myiasis is a subject which, as far as we can discover, has as yet received no attention from the medical men of China. Usually it is only open wounds which are infected by the larval stage of flies. We have ourselves seen but one case of intestinal myiasis, but it is probably much more common than this would suggest.[1] Myiasis of wounds and open sores is, however, very common. All parts of the body may be affected. Carbuncles of the back are often teeming with maggots and present a horrible spectacle. We have seen a large sarcoma of the eye in a child in whom the primary growth was practically destroyed by these parasites, the orbit being full of maggots. We have at present in hospital a man with a urinary sinus in the scrotum containing many of these larvæ. Instances indeed might be multiplied indefinitely. The flies responsible for the infection have, in these regions, we believe, never been investigated.

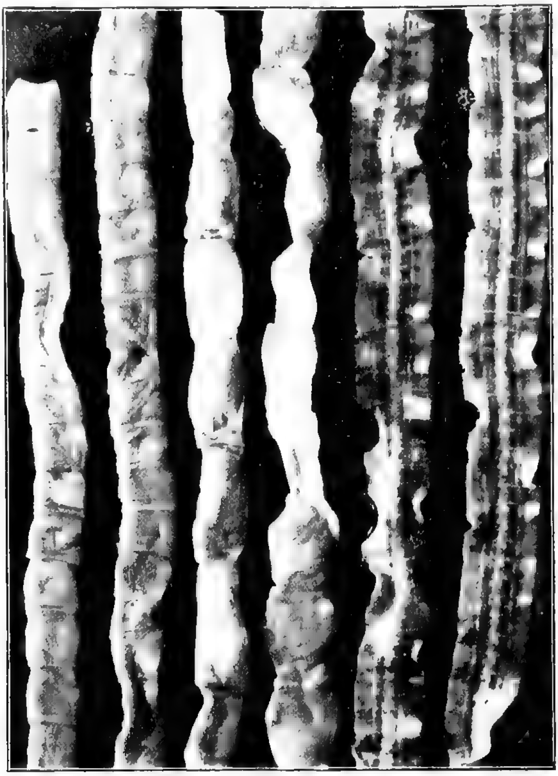


FIG. 91. Left, maturing segments of Tænia solium; centre, mature segments of Tænia saginata; right, mature segments of Dibothriocephalus latus. All life size. (*By Jefferys.*)

The treatment we have found most satisfactory is the use of pure izal dropped into the wound, the maggots being caught with forceps and removed as they appear on the surface.

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[1] Cole, Ningpo, has sent us specimens of a good case, the maggots from which developed into a small "blue bottle fly." (*Jefferys.*)

Diagnostic Table of the Helminths.*

Helminthes	Platyhelminthes	Cestoda (scolex has)	2 sucking grooves. Genital pore on ventral side of segment	Pseudophyllidæ	Genitalia and pore single	Dibothriocephalus
					Genitalia and pore reduplicated	Diplogonoporus
			4 round suckers. Genital pore on lateral margin of segment	Cyclophyllidæ	Head with hooks, or no hooks, on rostellum. Mature segments longer than broad. Genital pore irregularly alternating	Tænia
					Head with single row of hooks. Mature segments broader than long. 3 testes. Genital pore always on same side	Hymenolepis
					Head 3 or 4 rows of hooks. Mature segments longer than broad. Double set of genitalia. Uterus a branched reticulum.	Dipylidium
					Head double set of hammer-shaped hooks. Many testes. Genital pore always on same side. Ova in separate bags	Davainea
		Trematoda	(Monogenea, parasitic in fishes only)			
			Digenea	Paramphystomidæ (2 suckers at ends of body)	Paramphystominæ (not parasitic in man)	
					Cladorchinæ: Cladorchis watsoni	
					Cladorchinæ: Gastrodiscus hominis	
				Schistosomidæ (separate sexes)	Schistosomum hæmatobium (terminally spined eggs)	
					Schistosomum mansoni (laterally spined eggs)	
					Schistosomum japonicum (eggs without a spine)	
				Fasciolidæ (2 suckers in anterior half of body)	Male genitalia in front of female genitalia	Dicrocœlium
					Male genitalia behind female genitalia; Cirrhus pouch absent; Lobulated testes	Opisthorchis
					Male genitalia behind female genitalia; Cirrhus pouch absent; Branched testes	Clonorchis
					Male genitalia behind female genitalia; Cirrhus pouch absent; Round testes	Metorchis
					Male genitalia behind female genitalia; Cirrhus pouch present; Branched testes; Gut branched	Fasciola
					Male genitalia behind female genitalia; Cirrhus pouch present; Branched testes; Gut simple	Fasciolopsis
					Male genitalia behind female genitalia; Cirrhus pouch present; Smooth testes	Heterophyes
					Male genitalia behind female genitalia; Cirrhus pouch present; Lobulated testes	Paragonimus
	Nemathelminthes	Nematoda (with alimentary canal)	Hypophallidæ (bursa absent)	Œsophagus rhabditiform	Adult parasite rhabditiform—simple life history	Oxyuridæ
					Adult free living—rhabditiform. Parasitic form (parthogenetic female) filiform œsophagus	Angiostomid strongyloides
				Œsophagus muscular bulb	3 large fleshy lips	Ascaridæ
					Spines on anterior surface of body	Gnathostomidæ
					2 fleshy lips. No spines. Collar round mouth.	Physalopteridæ
				Œsophagus ribbon like		Filaridæ
				Œsophagus cellular	Trechotrachelidæ	Trichocephalus Trichinæ
			Erophallidæ (bursa present)	Mouth armed with setæ or cutting plates	Strongylidæ	Ankylostomum duodenale Necator americanus
				Simple mouth. 3 small papillæ round mouth. 2 spicules. Bursa with rays		Metastrongylidæ
				Simple mouth 6 small papillæ round mouth. 1 spicule. Bursa, no rays		Eustrongylidæ
		Acanthocephala (no alimentary canal)	12 rows of hooks on proboscis			Echinorhynchus hominis
			6 rows of hooks on proboscis			Echinorhynchus gigas

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* For the general idea of this table the author is indebted to the lectures of Dr. Leiper, Professor of Helminthology, London School of Tropical Medicine.

A LIST OF METAZOAL PARASITES FOUND IN ANIMALS.

in China, principally from observations by Jefferys, of Shanghai, with notes on some rarer specimens in his own private museum.

Taking Braun's classification:

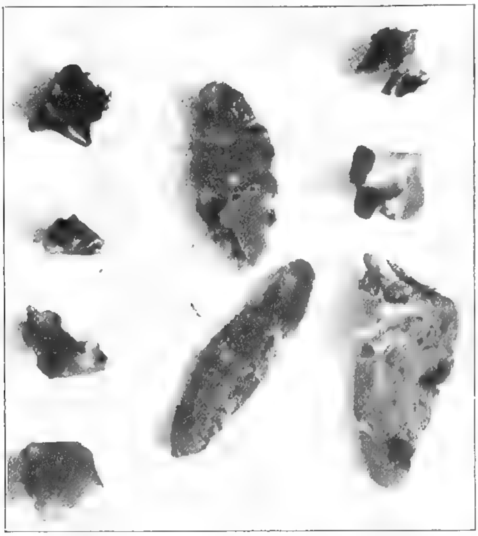

FIG. 92. Adult Fasciola hepatica (life size). (*By Jefferys.*)

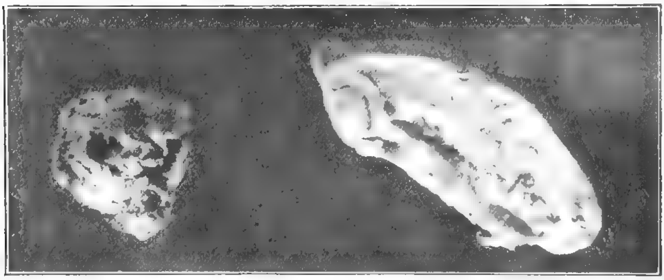

FIG. 93. Fasciola hepatica. On the right, a piece of liver showing a bile duct containing a large worm (life size). On the left, a piece of liver showing dilated bile ducts, the condition being due to the flukes (to size). (*By Jefferys*).

Platyhelminthes.

(*Flat-worms.*)

Class I. *Trematoda.*

Family 1. *Paramphystomidæ.*

Amphistoma conicum from rumen of ox (Hongkong).

Gastrodiscus hominis.

Not yet observed.

Family 2.—*Fasciolidæ.*

Genus 1.—Fasciola.

Sp. 1.—Fasciola hepatica.

Abundant in sheep in Shanghai.

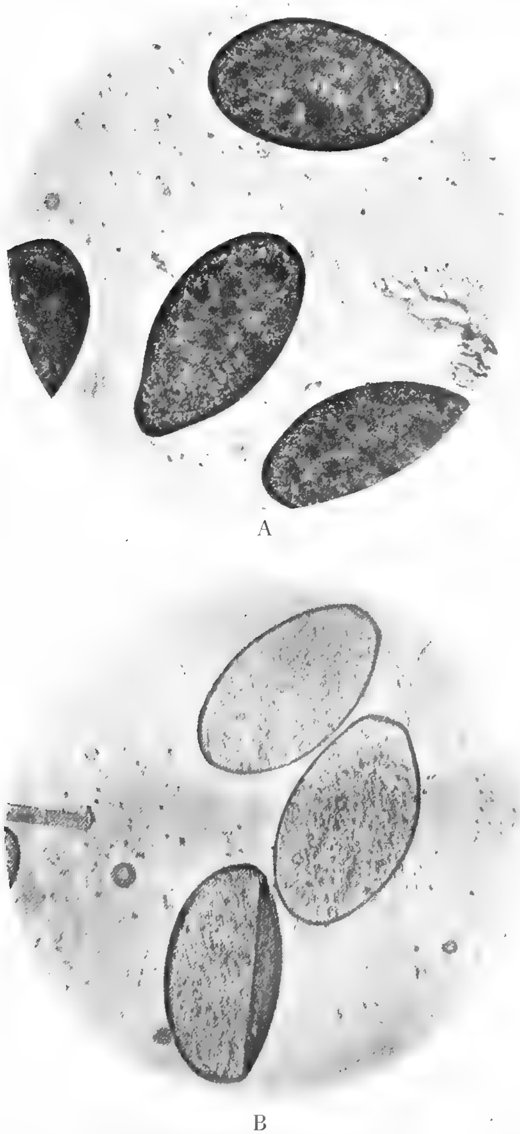

Fig. 94.—Ova of Fasciola hepatica, 1/6 objective. *(By Bell and Sutton, Hongkong.)*

Genus 2.—Fasciolopsis.

Sp. 1.—Fasciolopsis buski.

Common in pigs (Hongkong and Swatow).

Genus 4. Opisthorchis.
Sp. 1.—Opisthorchis felineus.
Distoma pancreaticum (a closely allied species) found in great numbers in pancreatic ducts of cattle, buffaloes (Hongkong).
Sp. 2.—Opisthorchis sinensis.
Plentiful in animals (Hongkong and Shanghai).

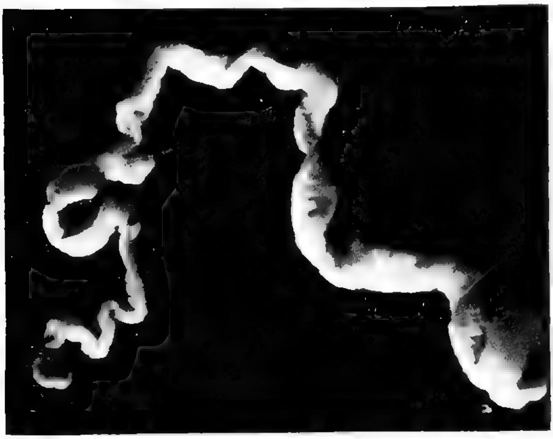

FIG. 95. The plerocercoid of Dibothriocephalus mansoni (life size). (*By Jefferys.*)

An unnamed species of opisthorchis was sent to us by Maxwell, Yungchun. It reached us in too damaged a condition for proper examination, but was remarkable for the fact that the whole body was covered with cuticular spines.

Genus 7.—Dicrocælium.
Sp.—Dicrocælium lanceatum.
Plentiful in sheep (Hongkong).
Family 3.—*Schistosomidæ.*
Schistosomum japonicum.
Common in cats (Hunan).
Class II.—*Cestodes.*
A. *Bothriocephaloidæ.*
Genus 1.—Dibothriocephalus.
Sp. 1.—Dibothriocephalus latus.
Found in dogs (Shanghai and Hunan).
Genus 2.—Diplogonoporus.
Sp.—Diplogonoporus grandis.
Bothriocephalus mansoni.
From the cellular tissues of a wild hog, sent by

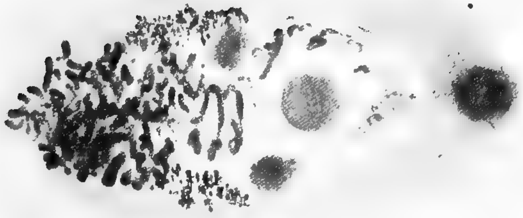

FIG. 96.—Dicrocœlium lanceatum. Cleared, 50 mm. planar. (*By Bell and Sutton, Hongkong.*)

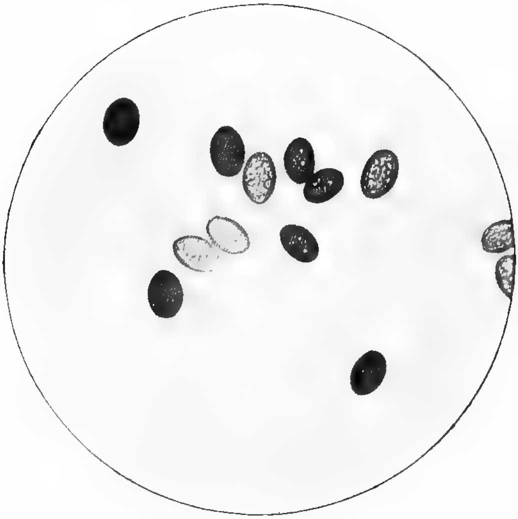

FIG. 97.—Ova of Dicrocœlium lanceatum, 1/6 objective. (*By Bell and Sutton, Hongkong.*)

Dr. Fowler from Kuling; this is a sparganum stage (see photograph). Manson's description is hardly so good as Braun's, to which we refer for the actual condition.

B. *Tæniidæ.*

Genus 3. Dipylidium.

Sp. Dipylidium caninum.

Abundant in Shanghai in dogs and cats, literally hundreds being present in the same host. The motile, isolated, cucumber-seed-shaped segments found in the large intestine should not be mistaken for fluke-worms, which they closely resemble.

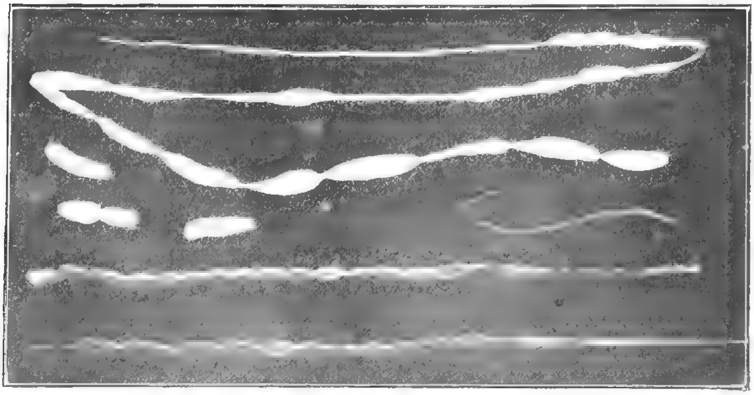

Fig. 98. Dipylidium caninum (life size). (*By* [illegible])

Genus 4.—Hymenolepis.

Sp. 2.—Hymenolepis diminuta.

Found in rats (Shanghai).

Sp. 3.—Hymenolepis lanceolata.

Found in geese in Shanghai.

Genus 6. Tænia.

Sp. 1.—Tænia solium.

Cysticercus stage abundant in the pigs of Shanghai. Cysticercus is found on the liver surface and between the layers of the peritoneum and omentum. Muat has sent us a number of segments of Tænia solium found in Weihaiwei. We hear constantly of the prevalence of tapeworm in North China, and it is often put down as beef tapeworm, but this is probably an error. We think it will be found that tænia solium is the common parasite.

Sp. 2.—Tænia marginata.

Found, but rarely, in sheep (Hongkong).

Sp. 4.—Tænia crassicollis.

Found in dogs (Shanghai).

Sp. 5.—Tænia saginata.

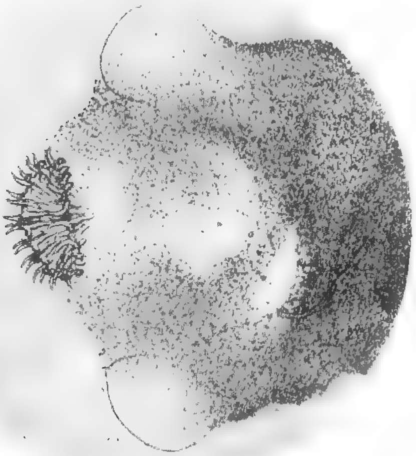

FIG. 99 Head of Tænia marginata. Greatly magnified. (*By Bell and Sutton, Hongkong.*)

The worm has been reported as prevalent in North China, around Peking, etc.

Sp. 8.—Tænia echinococcus.

Found in dogs (Peking).

Nematodes.

(b) Family—*Angiostomidæ.*

Genus 3.—Strongyloides.

Strongyloides intestinalis.

A dog's intestine (Shanghai) was found to swarm with minute larvæ which in every sense answered to those of this parasite. We believe that the parasite is present in Shanghai.

(d) Family —*Filaridæ.*

Genus 5.—Filaria.

Sp. 2. Filaria immitis.

Extremely common in dogs all over China and Japan, usually found in right heart and thereabouts.

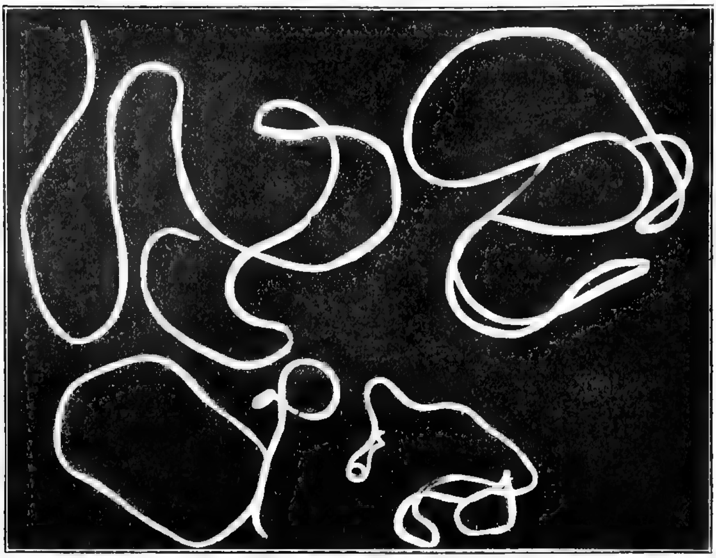

FIG. 100.—Adult Filaria immitis (life size). Two male and two female worms from a dog's right heart. (*By Jefferys.*)

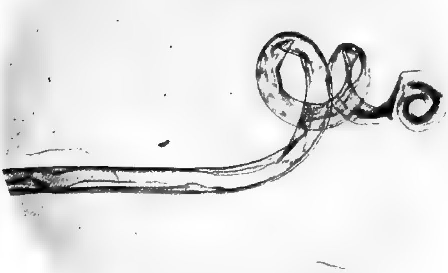

FIG. 101 Caudal end of male Filaria immitis. (*By Bell and Sutton, Hongkong.*)

It has been recorded as a human parasite, but infrequently.

Filaria of the ox aorta reported as common from Hongkong.

(e) Family—*Trichotrachelidæ*.

Genus 7.—Trichinella.

Trichinella spiralis.

Reported from Amoy.

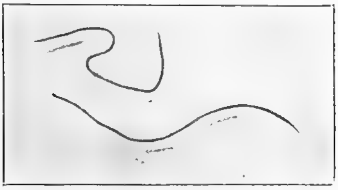

FIG. 102.—Strongylus apri (life size). Adult worms from the bronchi of a pig. Shanghai. (*By Jefferys.*)

(f) Family—*Strongylidæ*.

Sp.—Strongylus apri.

Commonly found in the bronchi of pigs (Shanghai).

Genus 10.—Ankylostoma.

Found probably all over China in the dog, cat, pig, etc.

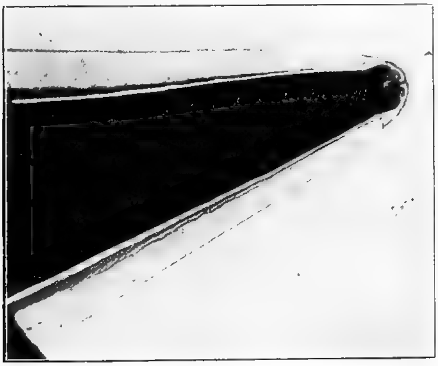

FIG. 103.—Cephalic end of Ascaris canis (magnified). (*By Maxwell.*)

(g) Family—*Ascaridæ*.

Genus 12.—Ascaris.

Sp. 1.—Ascaris lumbricoides.

Found in dogs, pigs and cats.

Sp. 2.—Ascaris canis.

Common in cats, dogs, pigs, and so forth, in Shanghai. Found also in chickens.

Acanthocephala.

1. Echinorhynchus gigas.

Several specimens found adherent to pigs' intestines (Shanghai and Hongkong).

The foregoing may be taken as established findings of which we have the specimens or other undoubted proof.

We pass now to our collection of parasites and note the following, which we do not care to identify definitely, though the suggestions made may be given some weight. It is not considered in place to enter into elaborate descriptions of these parasites in the present volume. Their presence is merely noted.

Shanghai Rat.

(a) From a rat's stomach, apparently a small specimen of an ascaris.

(b) From a rat's intestine, five nematode worms slightly smaller than ankylostomum, and without hooklets.

(c) From the surface of a rat's liver. About every other rat shows multitudes of worm eggs resembling trichocephalus dispar, but larger and lighter in colour, proportionately flatter in the middle as well. These are within the peritoneal cavity.

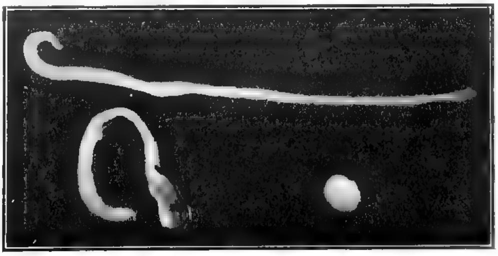

FIG. 104. Cysticercus fasciolaris (of Tænia crassicollis) in various stages of development. (*By Jefferys.*)

(d) Extraperitoneal and in the substance of the liver a morbid condition is occasionally found which resembles the infiltration of the liver substance by some form of nematode—A very much convoluted and curled-up parasite apparently showing as loops and thread-like lines as it approaches or lies on the surface.

(e) About every other rat shows one or two of the encysted sparganum stage of a tapeworm. We have recently seen these reported from America. They have been also sent to me by Muat from Weihaiwei. The parasite is rolled in a tight ball; measures from four to eight or nine centimetres in length, the head resembles that of *Sparganum mansoni*, but is much smaller. The tails in the small specimens are globular and cystic; in the large ones, taper to a blunt point. The whole lies in a cyst under the hepatic peritoneum. Naturally one would look for adult forms of this worm in a rat-eating carnivore, and after diligent search three perfect specimens of an adult tapeworm with resembling characteristics were found in a dog's intestine. (See Parasites of Dogs, (e), page 212.) It is probably cysticercus fasciolaris.

(f) From the large intestine, a minute fluke-worm less than a millimetre in length, reddish in colour.

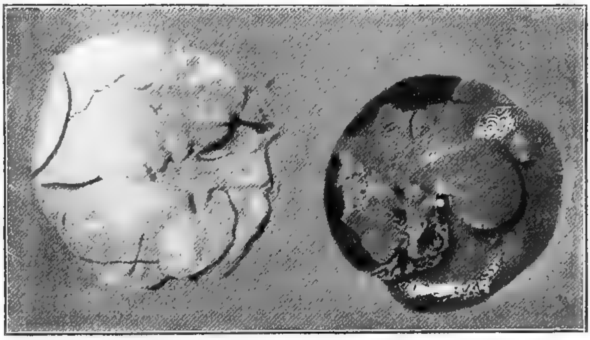

FIG. 105.—Rat livers showing encysted Cysticercus fasciolaris. (*By Jefferys.*)

(g) From the rat's intestine, a long, many-segmented tapeworm. The specimen is badly broken up, but may be hymenolepis diminuta.

(h) From a rat's bladder, three specimens of a minute, thread-like worm, size about 5 to 7 millimetres in length; colour white.

Sheep.

(a) Fasciola hepatica (see above).

(b) From a sheep's intestine, numerous nematodes, size of trichocephalus trichiurus. Description follows. In colon of sheep (Shanghai). A flexible, graceful nematode worm, 10 to 15 mm. long, not particularly slender; no embryos found and no ova. Worms adherent to the gut and very plentiful throughout the colon. No bursa observed.

Goose.

(a) Hymenolepis lanceolata; also certain numerous narrow tapeworms.

Chicken.

(a) Small tapeworm, probably the same as that found in the goose.

(b) Small specimen of an ascaris, probably lumbricoides.

(c) From the chicken's intestine, ankylostomum duodenale: six females, one male.

Duck.

(a) From the intestine, numerous specimens of an echinorhynchus like worm, bright yellow bodies, able to contract and expand, bore deep into the mucous membrane with its rostrum.

(b) Tapeworm, as described for geese and chickens.

(c) Very prevalent, one-third inch long, narrow, dark-coloured fluke-worm, distomum.

(d) One specimen, apparently of the same worm, an inch long; that is, three times as long as the former one described.

(e) A few specimens lighter in colour and smaller, apparently the same worm.

(f) A few specimens very minute, light in colour, apparently the same.

(g) A minute, blood-sucking worm in the duodenum and bright red in colour. Capable of burrowing deep in the mucous membrane, withdrawing and extending itself. Apparently a blood-sucking worm of the echinorhynchus sort.

Cat.

(a) From the intestine, *Tænia crassicollis*, not absolutely identified, as the specimen is somewhat broken. The head is buried in mucous membrane.

(b) Another tapeworm. Not identified.

Pig.

(a) Ascaris lumbricoides.

(b) From the pig's colon, a nematode one centimetre long. Description follows. In colon of pig (Shanghai). Abundant straight bristle-like worms, loose in the large intestine, no single specimen being adherent. Ten mm. long on the average. The worms are stiff like small hairs. The anterior ends are all alike, blunt, with distal oral opening, this enclosing about three pointed tooth-like structures within the mouth. The cuticle is striated and there is a layer of muscle within. The caudal end, in most of the specimens, is sharply pointed with the anal pore two mm. from the tip. No ova are seen within or without any of the worms, otherwise the appearance is like female Oxyuris vermicularis. The gut runs through the body of the worm in a straight but lobulated fashion. One specimen shows an expanded caudal bursa, and is evidently a male worm. No spicules are observed. No embryos found.

"**Trichinosis.**—A search for the *trichina spiralis* has been kept up during the year. Portions of muscle tissue from 560 pigs have been examined microscopically, but so far no case has been discovered."

"**Trichinosis.**—In view of the large amount of pork used for food, I began to examine the swine for trichinosis. At the close of the year, 230 pigs had been examined with a negative result. This is so far satisfactory though the number examined is too small to enable any definite statement to be made as to the prevalence or otherwise of this disease. I hope to be able to continue the examinations during 1905." (Hongkong Health Reports.)

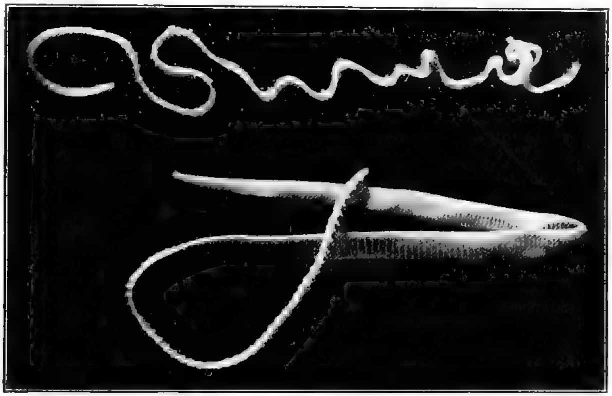

FIG. 106.—Tænia crassicollis (life size). (*By Jefferys.*)

In China (Amoy) the parasite was found twice in 219 carcarses Albutt and Rolleston, p. 914.

(c) From the pig's bile ducts, *Opisthorchis sinensis:* a few specimens.

(d) Echinorhynchus gigas (see p. 208).

(e) From the pig's bronchi. In the terminal bronchi of several pigs a filaria-like worm containing myriads of embryos, the adult one and a half to three inches long. It is *Strongylus apri.*

Snake.

"Worm resembling ankylostomum" (Sutton, Hongkong).

Dog.

(a) Ascaris canis. Abundant.

(b) Dipylidium caninum. Intestine. Abundant.

(c) Ankylostomum duodenale. Abundant.

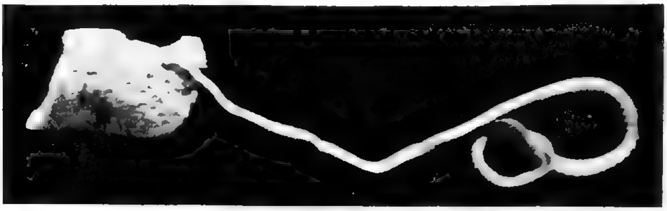

FIG. 107. Same as in Fig. 106, adherent to cat's intestinal mucosa. (*By Jefferys.*)

(d) Filaria immitis. Abundant.

(e) Adult tapeworm, ten to twenty centimetres long. This worm is that which we presume to be the adult of the rat-liver sparganum.

CHAPTER VII.

DISEASES OF THE ALIMENTARY CANAL.

Epidemic Stomatitis. Scorbutic Stomatitis. Gangrenous Stomatitis. Dysentery. Sprue. Stricture of the Rectum.

Epidemic Stomatitis.—We have ourselves met with in Formosa a form of stomatitis not mentioned in books on tropical medicine, but quite common here and occurring, we have been told, in other places in South China. We have named it epidemic stomatitis. It is a disease which is specially prevalent in schools and institutions, often affecting a large proportion of the inmates, and spreading with great rapidity.

Ætiology.—Of the ultimate cause we can say but little, as we have not yet had time to investigate the bacteriological factors. The affection appears to be spread by the careless use of common chopsticks and bowls among patients, especially children eating at the same table.

Symptoms.—The patients all complain of soreness of the mouth. On examination the tongue and sometimes the palate are found to be bright red in colour, the papillæ of the tongue, especially at the base, are swollen and prominent. There is slight salivation. Digestive disturbances, especially in the direction of constipation, frequently accompany the stomatitis, but there is not necessarily any stomachic disturbance. In many cases superficial ulcers of tongue, lips, or gums appear.

Treatment. –The disease, if no re-infection occur, is quickly cured by a mouth wash of pot. chlorate with tinct. myrrhæ and glycerine. Ulcers should be touched with silver nitrate caustic. But with constant re-infection the disease may run a very chronic course. A saline aperient with gentian and rhubarb should be given internally.

O. T. Logan gives the following formula:

℞. 5. Oil of eucalyptus,	48 grains.
Oil of wintergreen,	36 drops.
Thymol,	60 grains.
Menthol,	10 grains.
Boric acid,	3 ounces.
Dissolve the above in alcohol,	1 pint.
And add water,	7 pints.

A cheap substitute for "listerine." Add one or more parts of water when using for mouth wash, gargle, or spray.

Prophylaxis.—The disease can easily be prevented and an outbreak rapidly cured by the simplest measures.

If common wooden chopsticks are used, each person should have a separate pair for his own exclusive use. If an outbreak has already commenced all the chopsticks should be burnt and new ones provided. After each meal the rice bowls should be placed in a large tub and boiling water poured over them. By these simple methods we have never failed in checking an outbreak.

Scorbutic Stomatitis.—Though scurvy is not primarily a disease of the alimentary canal, this form of scorbutic stomatitis is most satisfactorily dealt with here.

A form of scurvy of very mild type is common in Formosa and in parts of South China.

Ætiology.—The cause would seem to be the use of a diet of white vegetables, to the exclusion, almost or altogether, of green foods and meat. It is, therefore, found almost entirely among the poorer classes and is most frequent among the women. Children are seldom attacked. On questioning, the patients, usually from country districts, will be found to have been living principally or altogether on sweet potatoes, bamboo shoots, and turnips with more or less rice. No green vegetables and little if any animal food.

Clinical Picture.—The patient, usually a woman, comes complaining of sore mouth, bleeding gums, and loose teeth. She is anemic, and often already a sufferer from malarial cachexia.

The mouth is in a foul-smelling condition, the gums are widely separated from the teeth which are covered with tartar and loose. On eating any hard food or even without this the gums bleed very readily As a result of this bleeding anemia may be severe even to the extent of œdema of the legs. One woman was brought to us in a state of extreme prostration from this cause, her mouth constantly dripping deeply blood-stained saliva, and she herself apparently almost beyond hope of recovery. In such severe cases other scorbutic symptoms may make their appearance, as petechial rashes and bleeding into joints and beneath periosteum, but these are very rare.

Treatment.—It is of the first importance to check the bleeding from the gums, especially where the continued loss of blood threatens life. For this we can suggest nothing to compare with calcium chloride in large doses. We believe that this acts not merely on the coagulability of the blood, but on the blood condition generally. We commence in severe cases with doses of gr. xxx three or four times a day, and gradually reduce this to gr. x three times a day. For external application we recommend the frequent painting of the gums with glycerine acid tannic.

B. P. An antiseptic mouthwash should be constantly used, and as soon as possible a toothbrush got to work.

The diet must be immediately altered and plenty of fresh fruit, especially oranges, pumeloes, etc., prescribed.

Though the cases react very quickly to treatment, the convalescence is often prolonged, and a course of iron and arsenic tonic is indicated.

Gangrenous Stomatitis (Cancrum Oris).—Cancrum oris is a very common disease in tropical and subtropical China. It affects especially young children, but we have seen it in adolescents and adults on rare occasions. The disease consists in a rapidly spreading gangrene of the lips, cheek, etc. In our experience it usually commences in a spot on the inner surface of the lip or cheek, and spreads outward toward the surface of the cheek and superficially on the inner side of the mouth. The result is that the gangrene is always more extensive than it appears on the surface, a matter of considerable importance when the question of treatment arises. The inflammation is so intense that it destroys everything it comes across, bone as well as soft parts. The odour from these cases is almost intolerable. Generally speaking, the younger the patient the more severe and rapid the disease, involving in some infants the whole face. Happily in such cases it is always rapidly fatal. In children a little older the disease is, as a rule, less rapid, and a few cases with treatment or even without treatment survive. This is a disease where the question of Christian medical ethics must be faced by every man separately. It is a serious problem whether in young children it is ever justifiable to attempt to prolong life in this condition. The disease in the young advances with such rapidity that great destruction of tissue, irremediable destruction, is always caused, and recovery if it does occur leaves the child a misery to itself and its friends and the probabilities to a girl in a heathen land of a life far worse than death. We speak of what we have seen ourselves. If we decide to attempt to save the patient the most vigorous measures must be adopted at once; the whole of the gangrenous area must be cut away freely with scissors till a fresh raw bleeding edge is left, and this edge then burnt freely with fuming nitric acid to de-

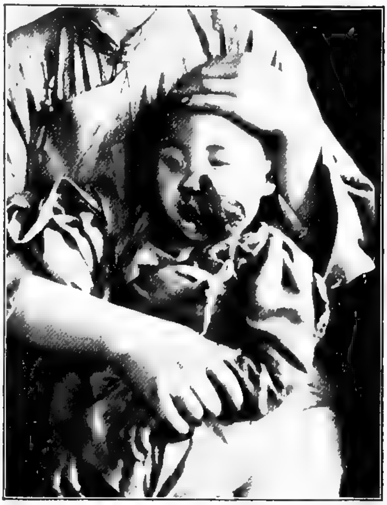

FIG. 108.—Cancrum oris. (*By Jefferys.*)

stroy any organisms still clinging to the surface. It must be remembered that in this disease half measures are always whole failures. In a large number of cases, especially in children, even this is unsuccessful and the gangrene continues to spread. If such spread is universal fresh measures are absolutely useless; if, however, as is usually the case in adults, any further development of the disease is at one point only, this point should be at once attacked with a repetition of the same measures, and these will then almost certainly prove successful. Should the patient recover, extensive plastic operations will be needed. In children it will probably be hopeless to attempt to cover the deformity, but in adults this can usually be accomplished by the formation of a new lip, or the closure of a hole in the cheek by flap operations.

Ætiology.—Of the retiology of the disease we know very little. The patients are always anemic and weakly, often the subjects of malarial cachexia. Indeed without some such previous lowering condition the disease is unlikely to attack the patients. It can hardly be called infectious, though we have seen two cases arising in one house, one an adolescent apparently from direct infection. Cancrum oris calls urgently for further investigation when the preparation of a suitable vaccine might at least limit at once the spread of the disease.

It is possible that in some cases cancrum oris is associated with kala-azar, but this remains to be proved, for China at least.

Dysentery.—The definition of this very familiar disease is not very easy, as the name has been applied to so many different conditions. We would define it ourselves as any inflammatory affection of the large intestine, not caused by the parasites of tuberculosis or syphilis, characterised by the presence of ulcerations of its wall. It follows that the characteristic symptoms will be: discharge from the bowel of mucus (hypersecretion, the result of congestion) and blood or blood and pus (the result of ulceration). These symptoms may of course be produced by other lesions such as malignant disease of the colon or rectum, or some parasitic affections as schistosomum japonicum, but this does not affect the correctness of definition. Syphilitic and tuberculous ulcerations seldom produce symptoms which can be mistaken for dysentery.

The disease would seem to have a very wide distribution, indeed no part of China is probably free from it, but, generally speaking, the hotter the climate the more common the disease, the more severe in its attack and the greater tendency to become chronic. At the same time where great destitution or famine exists dysentery is apt to break out in a severe form, whatever the climatic conditions. It is, as a rule, in South China and Formosa that we see dysentery at its worst.

Ætiology.—In dealing with the causes of dysentery we must treat

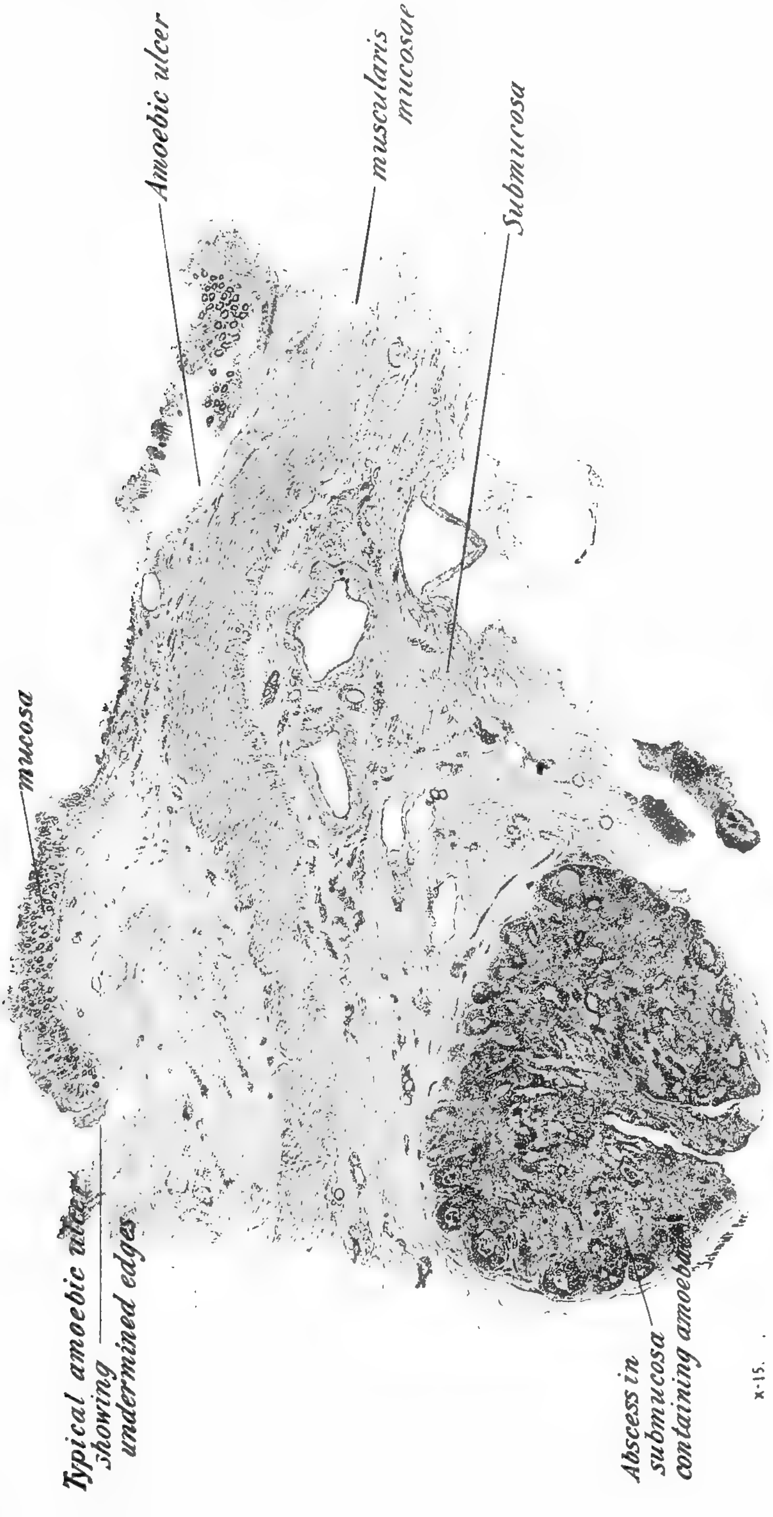
Typical amoebic ulcer showing undermined edges
mucosa
Amoebic ulcer
muscularis mucosae
Submucosa
Abscess in submucosa containing amoebae
x 15.

FIG. 109.—Histology of amoebic dysentery, section from cæcum. (*From Hemmeter's Diseases of the Intestines.*)

separately the constitutional causes leading to the disease, and the actual parasitic causes; remembering, however, that in its most acute form dysentery resembles the severest of epidemic diseases, and needs, as far as we can recognise, no constitutional preparation. In the large majority of cases, especially where dysentery is chronic from the first, there are certain definite predisposing causes that should be mentioned.

1. What we might speak of as general predisposing causes are all the causes of chronic ill health in tropical countries, and first of all in our own experience we should place malaria. Malaria, except in very rare cases, such as severe subtertian infections causing blockage of the capillaries of the intestinal wall, has never any direct connection with dysentery; it leads, however, in its chronic form to lowered general resistance, digestive disturbances, etc., which greatly predispose to the attacks of the parasitic causes of the disease. Other such causes are beri-beri, nephritis, etc.

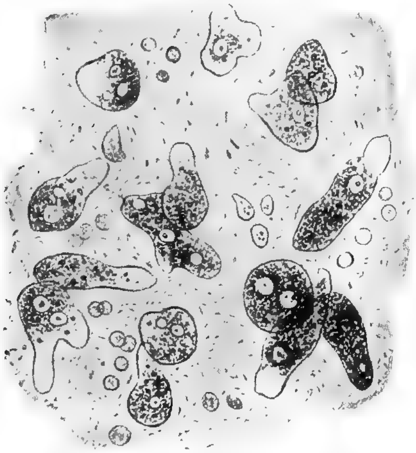

FIG. 110.—Amœba coli. (*Hemmeter.*)

2. Local predisposing causes are those which affect particularly the bowel and its secretions: abdominal chills, irritating and indigestible foods, constipation, diarrhœa, or the constant use of purgatives, excessive use of alcohol, and all other causes of congestion of the liver, metazoal parasites, perhaps of the nematode and certainly of the trematode varieties, protozoal parasites such as the Leishman body, and in the case cited above the malarial parasite.

Specific causes of dysentery again may be divided into amœbic and bacillary.

Amœbic dysentery is caused by the presence of the amœba coli, and (or) its accompanying pyogenic germs, in the wall of the intestine. Whether there are two amœbæ, the entamœba hystologica and the entamœba dysenterica, as taught by Schaudinn, is still disputed, and we think that the evidence in support of the theory of two forms is very far from convincing. What we do actually know is that amœbæ may and often do exist in the bowel contents without causing pathological effects while at other times amœbæ indistinguishable from these attack the walls of the bowel causing ulcers and dysenteric symptoms. The exact reason why at one time these parasites should be harmless, and at another pathological, we do not know, but neither do we know this in the case of the bacillus coli communis which often shows the same difference. The amœba is a small mass of protoplasm about 20μ in diameter with a round nucleus about $6–7\mu$ in diameter. The nucleus is rather characteristic from the dotted nuclear membrane that surrounds it; around the nucleus is a granulated endoplasm and outside this a narrow rim of clear ectoplasm. Much of the anatomy of the parasite is often hidden by granules, bacteria, etc., which it has taken up. It shows, especially on a warm stage, marked amœbic movements, a pseudopodia at first consisting of ectoplasm only is thrown out and gradually the rest of the amœba flows into this. In unfavourable circumstances the amœba becomes encysted and in this form is less easily recognised in the stool. The nucleus still preserves its characteristic form, however, while outside the parasite, which is now spherical, is a definite limiting membrane.

Bacillary dysentery is caused by certain specific bacteria. While a number have been accused of being the cause two only have maintained this reputation, those of Shiga and Flexner. In morphology these bacilli are very similar and differ only, and that to no great extent, in some of their cultural reactions. The bacillus is a short thick rod about the same length as the B. typhosus and is but little mobile.

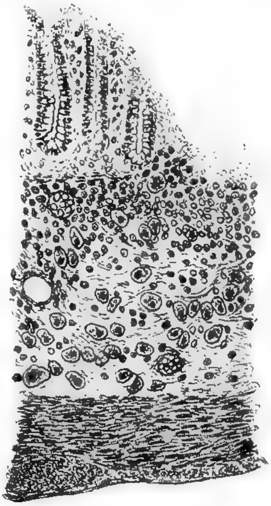

FIG. 111.—Section of colon wall at border of ulcer. Shows destruction of mucosa, thickening of submucosa and many amœbæ in submucosa. (*From Tyson's Practice.*)

Infection in both types takes place most commonly from infected water and food or fruit soiled with fæcal discharges.

All ages and both sexes are liable.

Clinical Picture.—We divide dysentery rather artificially into three forms: acute, subacute, and chronic.

Acute dysentery is one of the most distressing diseases we meet. It may occur either singly or in epidemics.

It commences, as a rule, without any prodromal symptoms, but often with a rigor and with a constant desire to go to stool; the motions at first may contain fæcal matter, but in a very short time only mucus and blood is passed. Tenesmus is very marked and the patient rapidly passes into a state of collapse. Treatment appears to have little if any effect, and death ensues from exhaustion after forty-eight or seventy-two hours of great suffering. The temperature is raised at first to 103° or 104°, but falls with the collapse and may remain subnormal. The mortality is

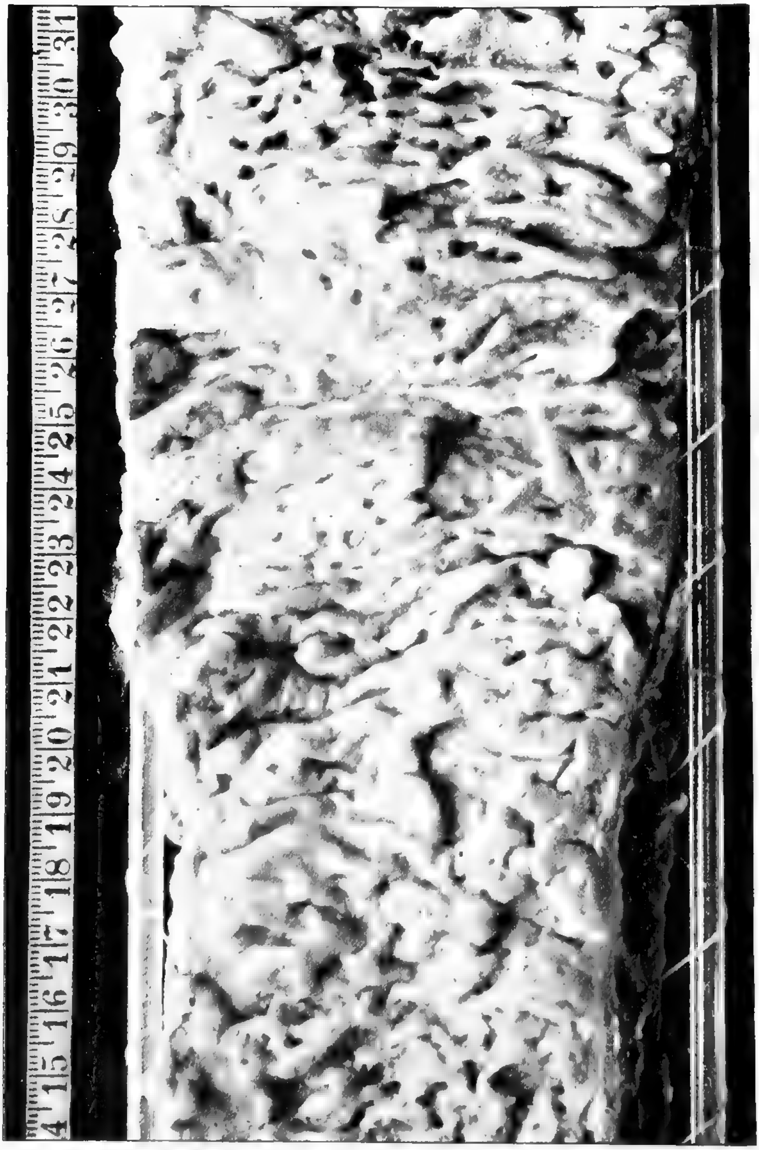

Fig. 112.—Amœbic dysentery (colon). (*From Hemmeter's Diseases of the Intestines.*)

very high. This form of dysentery is happily very rare, except in severe epidemics of which the writer has no personal experience. This is always a bacillary dysentery.

Subacute dysentery is the commonest of the three forms of the disease and the one most frequently seen in Formosa and South China. In origin it may be either bacillary or amœbic, and we know nothing but microscopic examination that will settle this point as a general rule.

The incubation period is from twenty-four to forty-eight hours. The disease then commences, as a rule, in a simple attack of diarrhœa, but instead of this improving it becomes more frequent till mucus and blood appear in the stools, and eventually in many cases the stools become little else than mucus and blood. Before long the passage of the stools is accompanied by tenesmus which may be very severe and accompanied by strangury. The patient suffers much from thirst, the tongue is white and thickly coated. There is always some fever during the first day or two but often the temperature does not rise above 101° and as the disease progresses falls still lower. In the majority of cases, even without treatment, after a week or so of these symptoms, they become much less urgent and the patient gradually recovers, or the disease becomes chronic, and especially the amœbic form of it.

In other cases, happily but a small minority, the symptoms become more severe instead of relaxing and the stools become very offensive, containing sloughs of mucous membrane in dirty greenish shreds. These cases are prone to two very serious complications, hæmorrhage and perforation. Happily, both complications are rare, especially severe hæmorrhage which we have seen only once or twice; perforation is more common than the text-books usually allow; the symptoms are not in our experience developed with the great rapidity that follows the perforation of a typhoid ulcer of the small intestine and, as often the patients are already in a very serious condition, we have no doubt that the perforation frequently remains undiagnosed. A large number of these seriously ulcerating cases die; the convalescence of those who recover is very prolonged, and a number of such cases pass into chronic dysentery.

Chronic dysentery as a primary disease is less frequent than the subacute variety, but rather more common than is sometimes allowed. The disease may be either bacillary or amœbic, but as a primary disease it is much more commonly amœbic. The majority of cases of chronic dysentery are simply the continuation of the subacute form and no particular description is needed for them. In the primary cases the patient after a varying period of chronic diarrhœa begins to notice mucus and blood in his stools, the temperature is not raised, or, if raised, but very slightly, and the stools number only some six or eight a day, but they are attended

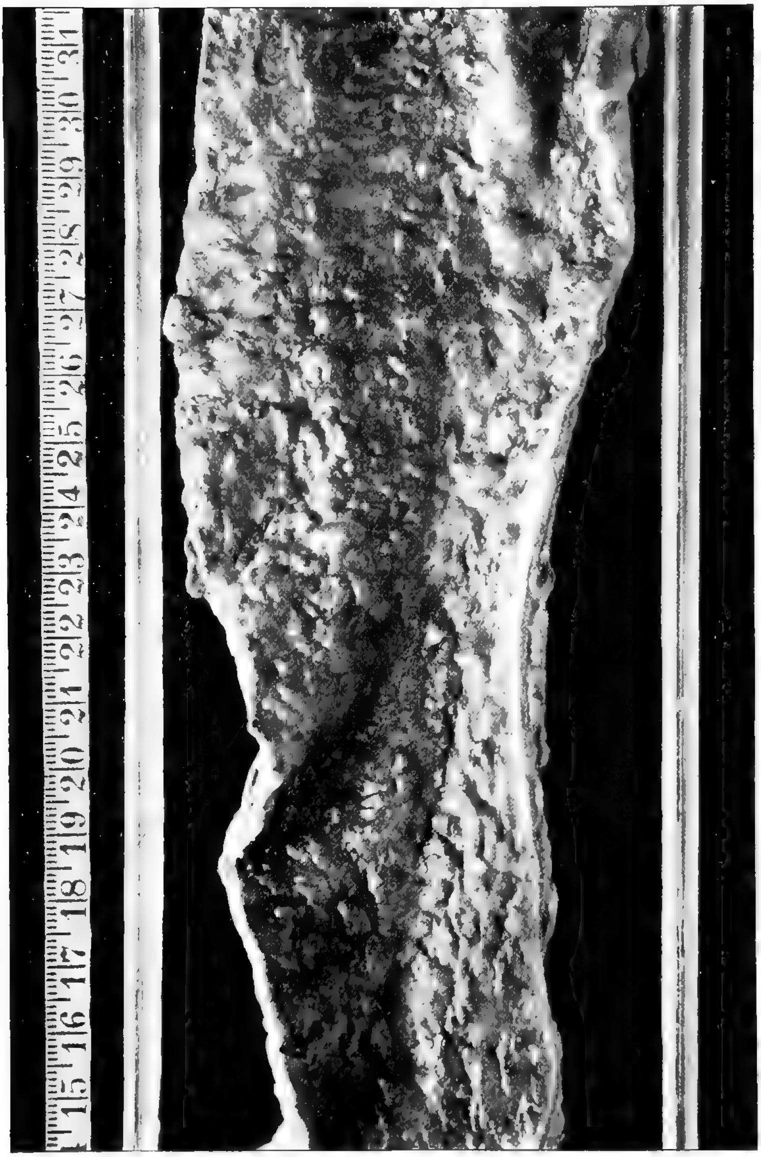

FIG. 113. Chronic dysenteric ulceration of colon. (*From Hemmeter's Diseases of the Intestines.*)

by a good deal of pain, and abdominal discomfort is always more or less marked, the tongue is large and dirty, thirst is usually marked and the appetite greatly impaired. The disease persists for months and even years, and the patients gradually go down hill, becoming anæmic and cachectic. The progress of the disease is not quite regular, exacerbations occur from time to time while at other times only two or three stools will be passed in the twenty-four hours, but mucus or (and) blood can always be found in them, and anything like formed stools are rare. It is difficult to form a true idea of the mortality of chronic dysentery, but especially among the Chinese it is probably a very serious cause of mortality, not by its own direct effects, but by rendering the patient liable to the attacks of other diseases, especially tuberculous affections.

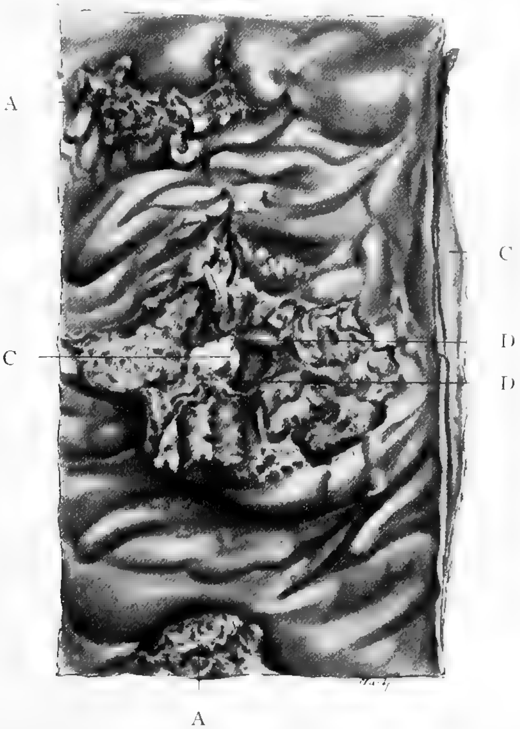

FIG. 114.—Perforating ulcer of colon (amœbic dysentery). (Specimen presented to the Museum of the Jefferson Medical College by Capt. C. F. Kieffer, U. S. A.)

A, *A*, Small irregular superficial ulcers extending to the submucosa only; *B*, perforation of a terraced ulcer; *C*, serosa; *D*, muscularis. The remainder of the large irregular ulcer extends no deeper than the submucosa.

Complications and Sequelæ.—The most important complications hæmorrhage and perforation, have already been mentioned. Another complication, more common than is generally given, is a form of septic arthritis arising especially in the course of chronic dysentery. The disease resembles in many ways gonorrheal arthritis, and is no doubt due to the absorption of bacilli from the alimentary canal. The larger joints, especially the knees, are most frequently affected, sometimes a single joint, more rarely bilateral. It is by no means rare to get the small joints, especially the carpal joints, affected. In the smaller joints anchylosis may occur, in the larger considerable stiffness is frequently the result.

The only important sequela of dysentery is liver abscess. This will be fully dealt with under that head (*v.* Chapter VIII).

Another sequela in our experience very rare, is stricture of the bowel. We confess to great difficulty in understanding the rarity of stricture following on a disease the essential of which is ulceration, and in which ulceration is often so extensive. It remains, however, that we have only seen one case where undoubted stricture, low down in the sigmoid, followed dysentery.

Treatment. The first rule of treatment of all cases of dysentery is *rest in bed.*

The second rule of treatment of all cases of dysentery is *starvation.*

The third rule of treatment of all cases of dysentery is *ipecacuanha, or salts.*

Our remarks on treatment will consist in little more than elucidation, explanation, and modification of these points. Rest in bed is almost essential for the successful treatment of every form of dysentery, even in the chronic stage. In the acute nothing else is possible.

It would be absurd, considering as we do that rest in bed is an essential to the proper treatment of dysentery, not to go further and say that this rest is still more important for the ulcerated bowel. How shall we realise this? The first essential is to get rid of all that is in the bowel irritating it, and this is best done by ℥ss to ℥j of castor oil with ♏xx of tinct. opii for an adult. Then, having emptied the bowel, to ensure its rest we must keep it empty, therefore starvation. In the large majority of cases the patient, if seen early, is in a healthy condition, and will take no harm whatever for a day or two without food, but naturally such treatment must be applied with at least a modicum of common sense. We do not advocate the starving of a patient already greatly reduced by chronic disease, and it is seldom desirable in children. Thirst is marked in all cases and must be relieved preferably with draughts of rice water which will give at the same time all the sustenance required for a day or two. Raw milk must be avoided as leaving a very large amount of residue, all beef teas and meat juices should be avoided as irritating to the intestine. If it is necessary to give food it is best given as carefully peptonised milk, whey and chicken jelly, and in severe and prolonged cases such nourishment must be given every two hours.

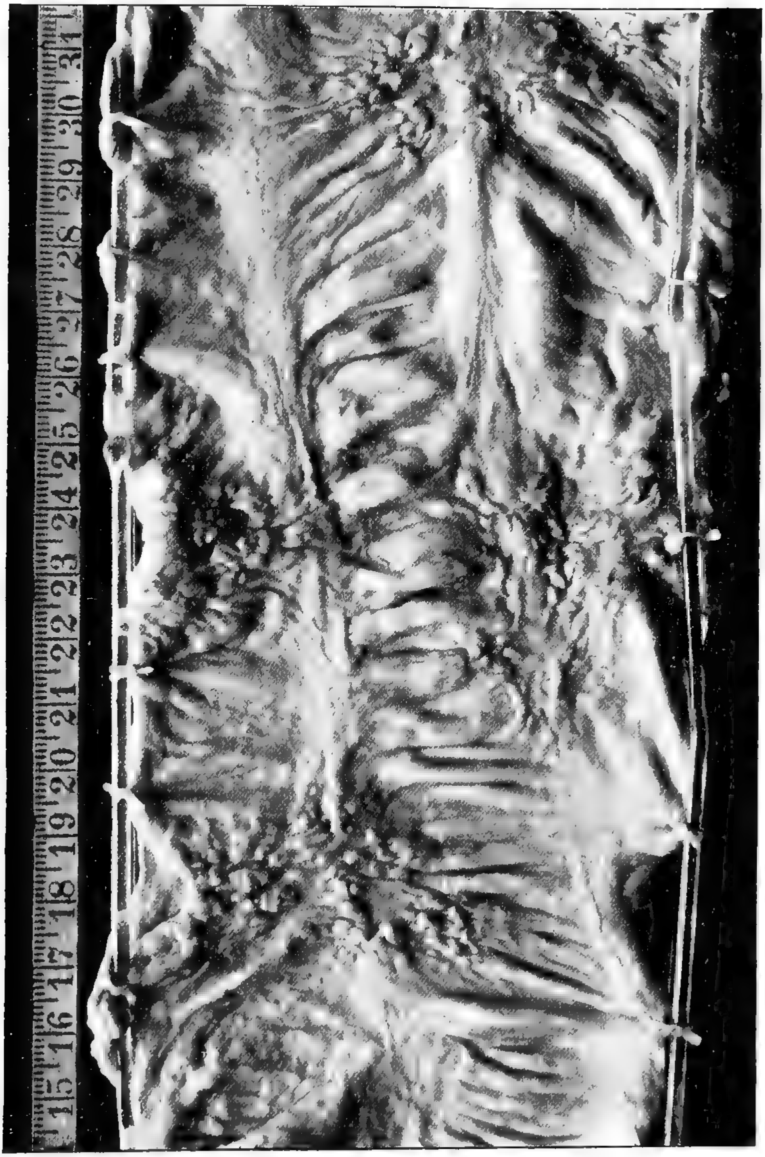

FIG. 115.—Healing dysenteric ulceration of colon. (*From Hemmeter's Diseases of the Intestines.*)

Drug Treatment. For this we have two reliable methods of treatment.

1. Ipecacuanha, and this should be given in powder, in capsule, or bolus. The dose must depend a good deal on the amount of nursing that can be given to the patient. If this be good the treatment should be first a dose of tinct. opii. ♏xx (for an adult) followed in fifteen minutes by gr. xxx of pulv. ipecac. The patient should lie flat in bed without a pillow and without drinking anything for three or four hours; he must not on any account swallow his saliva and must avoid all attempts at emesis. If this dose can be successfully kept down gr. xx should be given the next day, gr. x the following day, and gr. v for some days more. The ipecac. will probably cause a certain amount of diarrhœa of copious yellow stools, but this is of no importance. In a large majority of cases this treatment carried out faithfully will rapidly bring about a complete cure, especially in cases of amœbic dysentery.

Ipecac and certain other drugs prone to upset the stomach are put up by patented processes in form insoluble in the gastric juices, and this is a particularly elegant form for the administration of ipecac in dysentery. We have personally taken fifteen grains of ipecac each morning for four days without feeling the slightest inconvenience therefrom, and obtained the desirable physiologic effect. If an ordinary five-grain pill is prepared and coated with cellulose, we understand that the same result can be attained.

However effective this treatment may be, it is unfortunately true that its success depends almost entirely on the excellence of the nursing at the disposal of the physician. In a large majority of the hospitals in China nurses are still unknown and in very few are they in such numbers as to allow of their time being so fully occupied by a single patient.

We are coming, therefore, more and more to rely on the use of a saline mixture for routine treatment. The effect in many cases is as good as that of the ipecac treatment and is far more pleasant for the patient. We use ourselves the following simple prescription:

℞.	Magnes. sulphat.,	ʒj.
	Sodii sulphat.,	ʒss.
	Aquæ.,	q. s.

given every two or three hours till copious, slightly watery stools are produced. The dose is then lessened in frequency till just sufficient is given to keep the bowels freely open. The treatment usually works like a charm.

In a small minority of cases of dysentery one or other or both of these treatments prove inefficacious. One of the following may then be tried or used in association with the drugs mentioned above:

℞. Bismuth subnitrate,
Pulv. Doveri, āā, gr. v
Ft. Pulv. One every four hours.

℞. Sulphur, gr. xx
Pulv. Doveri, gr. v.
Ft. pulv. One every four hours.

Pulv. cinnamomi in gr. xxx doses, three times a day, or

Yellow santonin in gr. v doses, three times a day.

Manson[1] refers to a method of treatment which saw the light in China in these words:

> "The following is the formula of a preparation of Simaruba much used in Shanghai and there known as 'Rheins specific remedy for diarrhœa and dysentery.' I understand that the formula was purchased by the Shanghai Municipality for a considerable sum of money, so highly was it thought of by the European community of that City. Simaruba bark, three ounces; Chinese cinnamon, one ounce; boil in three quarts of water and allow it to evaporate down to one pint. When cool, strain into a brandy bottle add three tablespoonfuls of good brandy, and fill up by pouring cold water over the bark in the strainer till the bottle is full. Dose: A wineglassful three times a day."

If tenesmus is very severe, hypodermics of morphia should be employed or in less severe cases enemata of starch and opium. In very acute cases it is worth trying subcutaneous injections of hot saline solution to replace the fluid so rapidly removed by the purging.

The question now arises of local treatment of the affected bowel in chronic cases. Different opinions are held as to the value of large enemata, personally we think them of little use. No harm, however, and some good may be accomplished by washing out the bowel from time to time by high enemata of three to four pints of normal saline solution. The injections usually employed are for amœbic dysentery, thirty grains of quinine in three pints of warm water. ʒss to ʒj of tannic acid in three pints of warm water or ʒj of silver nitrate to three pints of warm water.

If employed the rectum should first be washed out by a large injection of warm saline solution. A catheter is then passed as high up the bowel as possible and the lotion allowed to enter as slowly as possible from an irrigator just raised above the bed. The patient should retain the injection as long as possible. The foot of the bed or the hips of the patient should be well raised. The injection may be repeated every third day. We have ourselves very little faith in trying to reach lesions high up the colon by such a method, and we believe that the more logical and effective way in very chronic cases is by making a small incision over the appendix, drawing this out and fixing it in the wound. A few days later the end is snipped off and washing of the whole of the large intestine periodically carried out through a catheter introduced into the appendix. In recent years successful attempts have been made to treat the disease by a serum. Some excellent results are reported from this treatment, but unfortunately a command of the serum is seldom possible to workers in China.

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[1] Tropical Diseases, p. 454.

It must be remembered that with all forms of dysentery there is a great tendency to relapses and recurrences from chills, dietetic indiscretions, etc.

Sprue (Psilosis).—It is a little difficult exactly to define this disease, but essentially it consists in an inflammatory condition of the small intestine leading to a very striking thinning of the intestinal wall.

Geographical Distribution.—Sprue is sometimes spoken of as a tropical complaint, but while commonly found in tropical regions it is by no means confined to these. For example, it is a commoner disease in Shanghai than in Hongkong.

Ætiology.—The parasitic cause of sprue remains unknown. That there is a parasitic cause no one familiar with the microscopic appearance of the small-celled infiltrated intestinal wall can for a moment doubt. For the sake of treatment it is essential that more attention should be paid to this point.

Predisposing causes can, however, be easily noted.

Sex.—The female sex is far more predisposed to the disease than the male sex. It would appear that pregnancy itself renders a patient more liable to sprue, but apart from this childless wives and unmarried women are still far more commonly attacked than men. All causes of bodily depression, climate, chronic diseases, especially of the alimentary canal, syphilis, etc., predispose to the disease. The affection is certainly much commoner among foreign residents than it is among the natives of the country, but these are not quite exempt; we have seen ourselves a typical case of sprue in a Chinawoman.

The question of the infectiousness of sprue has called forth a good deal of discussion. The disease is usually regarded as not infectious. That its infectiveness is not marked is true; on the other hand we have observed cases occurring in wife and husband, and in two intimate friends, such as to very strongly suggest that there is an infective agent which is at times carried from one individual to another.

The disease affects patients especially in the early and middle period of adult life.

Clinical Picture. In a typical case of sprue two symptoms are particularly prominent: ulceration of the mouth and intestinal disturbance. In the large majority of cases ulceration in the mouth is complained of and this may be an early symptom. The tongue is red and angry looking, with small ulcers, especially near the tip; the redness is not confined to the tongue, but spreads over the buccal surface of the cheeks, and superficial ulcers are common in all these situations and by the frænum under the tongue. The same condition is frequently present in the pharynx, and the result of all this is that intense discomfort attends all efforts to partake of food and salivation is troublesome. After a time the tongue seems to lose all the appearance of surface papillæ and to become red and glazed. Dyspepsia of a flatulent type is common and distends the patient a good deal, but a form of diarrhœa is the most noticeable of the bowel symptoms. The stools are remarkable. Their size is enormous, this to a great extent being due to their frothiness, being saturated all through with fine bubbles of gas. They are of a dirty white pasty colour, showing a marked deficiency in bile secretion; they are unformed and contain much undigested food, oils, and fermenting fats. They are irritating and apt to cause excoriation of the anus and surrounding parts. The calls to stool are particularly frequent in the morning hours. This is the typical condition, but often before the development of these typical intestinal symptoms there is a history of more or less long continued chronic diarrhœa with excess of bile. Following on the establishment of these symptoms we have very marked anæmia causing a muddy complexion, emaciation, great lassitude and, in extreme cases, œdema of the legs and feet. Death ensues from exhaustion.

Morbid Anatomy.—The most striking point in the post-mortem examination of a patient who has died from sprue is the condition of the bowel wall, especially of the small intestine. The macroscopic appearance is that of extraordinary thinning of the wall of the gut which in many places seems no thicker than tissue paper. On microscopic examination there may be almost complete destruction of the mucous membrane of the intestine, its place being taken by a small-celled infiltration. The atrophy is not confined to the mucous membrane, but also attacks the muscular coat which is greatly reduced in size. The serous coat is not as a rule affected.

Treatment.—A diagnosis having been made, the first point in the treatment is to remove the patient at as early a date as possible from the endemic area. Removal to a more salubrious spot within the area is of some use, but if the symptoms are clearly established the patient should be sent home without any delay; the speedy success of treatment depends greatly on this. Early and proper treatment ensures in nearly all cases a speedy cure even in many to the extent of allowing of a return to the east. Cases neglected at first are often fatal in the long run, and at any rate mean a long and very slow convalescence. The most important part of the treatment is by diet and several diets are recommended. Milk: The most commonly used and most successful treatment is by milk and milk only. The bowels are first emptied by a purgative, and the patient is then placed on two-hourly milk feeds, rising gradually to about five pints a day or even more, the patient being confined to bed.

Manson recommends that "For six weeks, dating from the time the stool becomes solid and the mouth free from irritation, no other food or drink should be permitted." Gradually after that a little solid food is added to the diet till a normal diet is reached. But on every threatened recurrence it is essential that recourse be had at once to strict milk diet again and this continued till well after all threatening symptoms have disappeared.

In a few cases milk treatment fails to relieve the symptoms of sprue or becoming too terribly wearisome to the patient requires some change. In such cases the meat treatment may be tried. This consists in the use of raw meat juice expressed from fresh lean meat in the place of milk, and later, as the symptoms begin to improve, fresh scraped meat may be tried. Others have recommended fresh fruit, and of fruits bananas and strawberries seem particularly helpful.

Drugs appear to have a very limited sphere of usefulness in sprue, and only one drug would seem to be worth seriously considering. Santonin has been strongly recommended and in some cases seems to have been wonderfully successful in the treatment of the disease. The santonin must be completely yellowed by exposure to the sun, in England this is a tedious process, but in the tropics a thin layer spread out on a Petri's dish can be prepared by a few days' exposure to the sun. The drug is given in gr. v doses from once to three times a day and is best administered in a teaspoonful of olive oil.

Some years ago a treatment for sprue was established in Shanghai by a quack of the name of Peter Sys. The method consisted of a sharp vegetable purge to commence with, followed by the administration of a powder supposed to consist of cuttle-fish bones and the use of enemata. In the hands of Sys himself some remarkable cures were wrought, but the secret of his remedy died with him and the use of powdered cuttle-fish bone has proved of little value in the hands of others.

Stricture of the Rectum.—No description of the common diseases of the alimentary canal in China would be complete without a reference to non-malignant stricture of the rectum. In some parts of South China and Formosa this disease is common. Among the first thousand in-patients admitted to the Tainan Hospital, Formosa, during the current

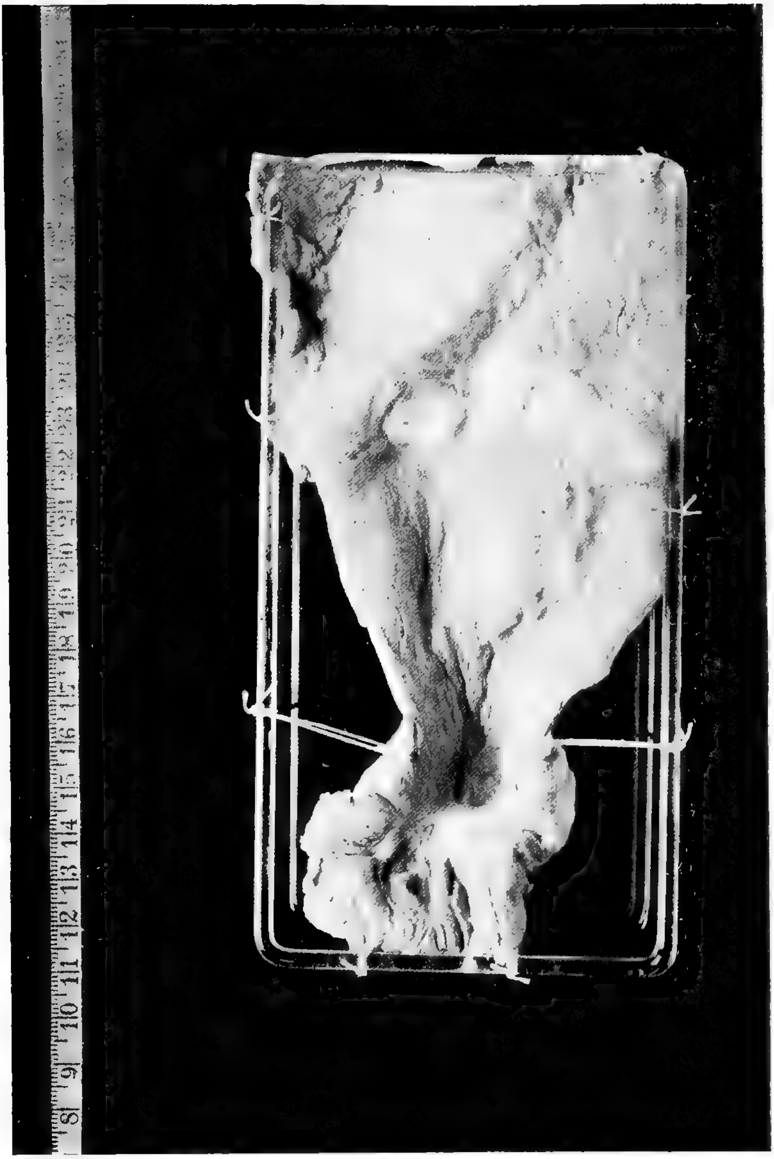

FIG. 116.—Carcinomatous stricture of the rectum. (*From Hemmeter's Disease of the Intestines.*)

year, no fewer than eight were suffering from this complaint, and we operate on an average nearly twenty times a year for this condition.

Pathology.—We shall deal very briefly with the pathology as this still remains obscure. A few, very few, of the cases are undoubtedly due to sodomy, either to direct injury caused by the practice, or by gonorrhœal, syphilitic or septic conditions following on it. Still fewer are due to dysentery. We only recall one case in our own experience where it seemed very probable that this was the cause. Some of the cases are undoubtedly due to tertiary syphilis of the rectum. But the pathology of the majority of the cases remains doubtful.

Sex and Age.—Both sexes are equally liable to the disease. The most common age affected is that of the middle period of life.

Clinical Picture.—The patient suffering from stricture of the rectum comes complaining of one of three conditions: chronic diarrhœa or dysentery, obstinate constipation, or hæmorrhoids. Of these the first is the commonest and unless an examination is made before admission the patient is usually admitted with this diagnosis. A careful consideration of the symptoms complained of is usually, however, sufficient to arrive at a true diagnosis of the case before physical examination is made.

The history is a long one, usually of several years during which no properly formed stools have been passed. Much straining is complained of on going to stool with little result, but without the frequent calls to stool and tenesmus that usually characterise dysentery. The onset has been gradual and progressive and without remission of symptoms, a condition which always occurs from time to time in cases of chronic dysentery. If constipation be complained of the symptoms are less characteristic and are often revealed only by physical examination, and in cases where the presence of piles is complained of this is nearly always the case.

The patient is usually distinctly ill and of a muddy complexion, the result no doubt of chronic septic absorption. The presence of fistulæ leading to the dilated bowel above the stricture is not infrequent.

Physical Condition. For practical purposes both of description and treatment the condition may be divided into two varieties.

1. Where a simple anular stricture of varying depth is present, the lower limit of which is usually from 1 1/2 inches to 2 inches above the anus. Happily this is in our experience the most common variety. The stricture may be extreme; on more than one occasion we have only been able to pass a probe with difficulty through the stricture. In such cases the symptoms are very severe, and the patient leads a pitiable existence.

2. Where the stricture consists in an indurated condition of the bowel from 2 or 3 inches above the anus down to the anus itself. The whole

wall of the bowel consists of an indurated rubber-like tube, which admits one finger usually with ease but is capable of no further dilatation. These cases are less common. They probably include all the cases where sodomy and primary venereal disease is the cause, and some of the the cases where tertiary syphilis is the cause.

Treatment. -This divides itself into the treatment best adapted to these two forms of stricture. In the second variety it must be confessed at once that at present we have no satisfactory treatment to recommend. Proctotomy whether by multiple incision or by posterior linear proctotomy has proved most unsatisfactory, as also have all attempts at systematic dilatation. At best but little can be expected from these forms of treatment, though when associated with injections of fibrolysin they may be of a little value. The patients in our experience steadily go down hill and die in a few years from some intercurrent disease. The treatment of the first variety, anular stricture, is much more satisfactory and if properly carried out and followed up, yields a practically complete cure in a large number of the cases. We are aware that a much more pessimistic view is taken by many writers, but we speak from our own practical experience of a number of completely cured patients.

The operation to be performed is simple posterior linear proctotomy, but to be successful it must be carried out boldly and thoroughly, half measures are whole failures.

The only instrument required for the operation is a blunt-pointed, curved or straight bistoury. Under an anæsthetic the finger of the left hand is introduced through the stricture; with a little patience this can always be effected even when on first examination only a probe can be passed. Without withdrawing the finger the bistoury is passed up alongside it to beyond the stricture. The finger is then withdrawn and the bistuoury made to cut its way out by dividing all the structures down to the coccyx. Only two precautions are needed. The cut must be accurately in the posterior middle line, as by this means all serious hæmorrhage is avoided. The cut must preserve its depth till the skin is cut through. It is most important that as the knife reaches the exterior, the skin wound should be the deepest of all. This allows of no accumulation of discharge in the upper part of the wound. A full-sized rectal bougie is now passed and the wound firmly packed. If possible the packing is left in for two days, but nothing is done to restrict the natural action of the bowels. About the fourth or fifth day the passage of bougies is commenced. The size next to the largest is passed well into the bowel. It causes some not very severe pain, at first, but this does not continue for many days. The wound is allowed to granulate and the patient is provided with a bougie before leaving hospital. We supply ourselves with a wooden bougie made by the hospital carpenter. However hard the bougie there is no danger of a patient himself damaging the wall of the gut. We instruct our patients to pass the bougie once a day for a year, once a week for another year and once a month for the third year. Where these instructions are carried out a complete cure is the rule.

We have given the details of this treatment very fully because the disease is much rarer at home than out here, and seems to be regarded very much as an incurable condition.

For congenital absence of the anus and rectum see Chapter XII.

CHAPTER VIII.

DISEASES OF LIVER AND SPLEEN.

Before commencing a review of the diseases of these organs that we see among the Chinese it would be well to recall to our minds a few of the most important points in their anatomy and physiology. The liver is the largest gland in the body and is an extremely vascular organ, receiving, as it does, blood from two separate sources—the hepatic artery and the portal vein. The portal vein drains the areas included in the whole length of the intestinal canal from stomach to rectum, as well as receiving the outflow from the spleen and pancreas. It therefore follows that every particle of material absorbed into the vascular system from the alimentary canal below the œsophagus has to pass through the liver cells as also have all waste products from the spleen and pancreas. Is it surprising that among dwellers in the tropics and subtropical regions, where diseases of the alimentary tract and spleen are so common, affections of the liver and derangements of its functions should also be common? The major functions of the liver are threefold: *The metabolism of carbohydrates* (glycogenic function) in which glycogen, a substance allied to starch and readily convertible into sugar, is produced, principally as the result of a diet of starch and sugar, though to a certain extent also on a proteid diet, and conveyed away from the liver in the hepatic vein. *The formation of bile*, containing the waste products of the liver and produced to a great extent by the decomposition of hæmoglobin. *The metabolism of nitrogenous material*, formation of urea, from proteid.

Our knowledge of the functions of the spleen are still very meagre. Apparently these are twofold. It may be considered the chief producer of white blood-corpuscles, while at the same time it is in the spleen that the dissolution of red blood-corpuscles takes place. The diseases of the liver and spleen with which we propose to deal in this chapter as being the most frequently met with in the east are:

1. *Tropical liver. Acute hepatitis. Liver abscess. Cirrhosis of the liver.*
2. *Splenic abscess and chronic malarial spleen.*

Parasitic infections have been dealt with in the chapter devoted to these diseases.

Tropical Liver.—There are few terms in medicine more unsatisfactory than this, including as it does at the hands of different writers everything from the mildest form of functional derangement to the acutest form of hepatitis. It is, however, so familiar a term and so conveniently describes a condition common among Europeans resident in the tropics, that it will probably be long before the name is given up. We wish, however, to make quite clear our meaning of the term in this chapter, and so define it as simple congestion of the liver, being, as a rule, an antecedent and predisposing factor though never a causal one of acute hepatitis on the one hand and liver abscess on the other.

Simple congestion of the liver is caused by three factors—diet, want of exercise, climate. And of these the first is infinitely the most important. We do not believe that a slight difference in the number of his blood-corpuscles or the excretion of his urinary salts makes the white man a martyr to his liver while the yellow man gets off scot-free.

Congestion of the liver is a disease not confined to either sex or any race, but is much more common among male white residents in the tropics, as among this class all three factors have often full play. It is a notorious fact that foreigners in the tropics eat too much and drink too much, the natives being usually abstemious in their eating and still more so in their drinking. It is seldom indeed that the white man attempts in any way to adapt himself to the mode of life which centuries of unconscious experience and the natural produce of the country have taught the Chinese to adopt. It is probably true of all tropical climates, it is certainly so of South China, that the native eats scantily of a proteid, and largely of a carbohydrate, diet, while the foreigner usually reverses this position, eating largely of a proteid and scantily of a carbohydrate diet. The native Chinese in many parts of South China eat but two meals and nowhere more than three meals a day, while the foreigner, as a rule, eats three full meals and also takes drinks or light refreshments at odd hours. The Chinese, again, drink very scantily, much of their fluid being used as little more than a mouth-wash and all of it being hot, whereas the foreigner indulges largely in iced drinks, often alcoholic. We believe that to these differences in diet rather than to any inherent differences in climate the frequent congestion of the liver is due.

While diet thus forms the predominating factor in congestion of the liver, there is no doubt that we have also to reckon with heat, especially as associated with the dietetic element in the causation of this condition. The high temperature of tropical lands, leading to excessive secretion from the skin followed by rapid cooling, tends to congestion of all the internal viscera, and the liver, being the largest of these, suffers most severely in the process. The danger of chill is considerably increased by the vaso-dilator action of alcohol on the arterioles of the skin, the tendency to the use of alcoholic liquors when heated being proverbial.

As a further factor we cannot omit the absence of regular exercise, which in the home countries must have considerable effect in removing waste products from the liver, and which is too often neglected in the tropics.

We cannot leave the subject without referring to the question of malaria and its commonly assigned position as a factor in the cause of congestion of the liver. We are ourselves very sceptical of the rôle which malaria is supposed to play. Our reasons for this are that the incidence of malaria is much higher among the native races than among the foreigners and that in individual cases a malarial factor can often be excluded; further, in non-malarial lands this disease is sometimes noted under the influence of the excessive heat waves that occasionally pass over western lands.

Clinical Picture.—This varies a good deal with the chronicity of the condition. In what we might call a confirmed case, the patient is sallow, often with a faint yellow tint, but no definite jaundice, is anæmic, thin, and emaciated, and irritable in temper with an inclination to fits of despondency. The digestion is poor and the bowels habitually constipated, or troublesome diarrhœa may take the place of constipation. The stools are pasty and light colored and flatulency is common. Frontal headache and sleeplessness are frequent symptoms. A dull aching is often complained of over the liver and pain over the right scapula. In early cases the symptoms are milder and more transient and the stools, instead of showing a lack of bile, exhibit a marked excess of pigment.

Treatment.—In the case of congestion of the liver we have a disease which particularly lends itself to preventive treatment. There is no reason why any man should suffer from the disease. Warnings should be given to all young men proceeding to the East of the causes of this disease and its prevention. We unhesitatingly condemn the use of highly spirituous liquors as absolutely harmful to the consumer, and while the light wines and beers may, we believe, be taken in moderation without any harmful results, we hold strongly to the opinion that the foreigner in the East is better without the use of any alcohol-containing drink as a regular beverage. Temperance, however, is not only required in the use of alcoholic stimulants, but equally so in the use of iced drinks of every kind. As far as diet in general is concerned, good fruit can usually be obtained without difficulty in the tropics at all seasons of the year and should form an important article of consumption, as also cooked vegetables and fresh ones if grown under one's own supervision. The cereals, especially rice, are too frequently neglected even by those living in a rice-growing country, while meat instead of taking the first place should take the last.

Clothing should always be changed when wet with perspiration, but we do not ourselves advise the use of the so-called cholera belt; at night flannel pajamas should be considered essential. A blanket should always be used in places where the temperature falls at night, but as many people find this rule an impossible one to follow we lay much more stress on the wearing of flannel pajamas all the year round.

A moderate amount of regular exercise is very important, but spasmodic turns of violent or exhausting exercise in a person not in "training" is worse than none at all.

The regular action of the bowels in a tropical country is almost essential to continued health, and this is best obtained not by the exhibition of drugs, but by the free use of the native fruits and by the administration of a large glass of water before breakfast and at night.

The active treatment of the disease, once established, must be effected on the lines given above with regard to diet and exercise.

A short course of medicinal treatment may be given as follows: At the commencement a sharp purge of colocynth with blue pill, followed by the administration every morning on rising, for a fortnight, of a dose of Carlsbad salts[1] in sufficient quantity to ensure a free, rather watery action of the bowels. This course of treatment may be followed by an acid tonic, such as:

℞.	Acid nitro-hydrochlor.,		♏x
	Liq. strychnin. hydrochlor.,		♏ii
	Tinct. aurantii,		♏x
	Aqua,	ad	℥ss

In water three times a day after meals.

Acute Hepatitis.

(Syn. *Acute Non-suppurative Inflammation of the Liver.*)

We have dealt at some length with tropical liver because chronic congestion is the most important predisposing factor in preparing the liver for the reception of the germs which cause acute hepatitis and liver abscess. The liver, we know, has a most important function in destroying the toxins absorbed from the alimentary canal and conveyed to it by the portal vein. So long as the viscus itself is healthy and functionally active it is quite able to deal with the poisons thus brought to it; but let its activities once be thoroughly deranged and it is easy to understand how it should itself fall a victim to these toxins. In acute hepatitis we see the liver as a whole attacked by these poisons, while in abscess a local, though more virulent, deposit alone occurs.

[1] Carlsbad salts consist of: Sodium sulphate, 2 parts; sodium chloride, 1 part; sodium bicarbonate, 1 part

Acute hepatitis we regard as a specific disease the parasitology of which is still obscure. Nor is our lack of knowledge on this point at all surprising, when we remember that the disease has received little or no attention from the writers of our systems of medicine and is almost universally confused with simple congestion or liver abscess.

The ætiological factor in acute hepatitis would seem to be diarrhœa or dysentery, although it is not possible in all cases to get a definite history of these complaints. Perhaps this is hardly strange as it is easy to understand that a small lesion or abrasion high up in the bowel might give entrance to the germs of the disease, while failing to give rise to any local symptoms.

Clinical Picture.—This may be best given by the history of an actual case. X. Y., a merchant, aged thirty-six. Seized at night by acute pain in the "stomach" of a stabbing nature, passing through to the back between the shoulders, accompanied by a rigor and fever. Pain relieved to some extent by vomiting. Temperature taken the next day, 102° F. We saw the patient ourselves early on the third day. The temperature (see chart) was then 100° F. and varied between that and 102° F. till the eighth day of the disease, when it fell rapidly, reaching normal on the ninth day, and not subsequently rising above that point.

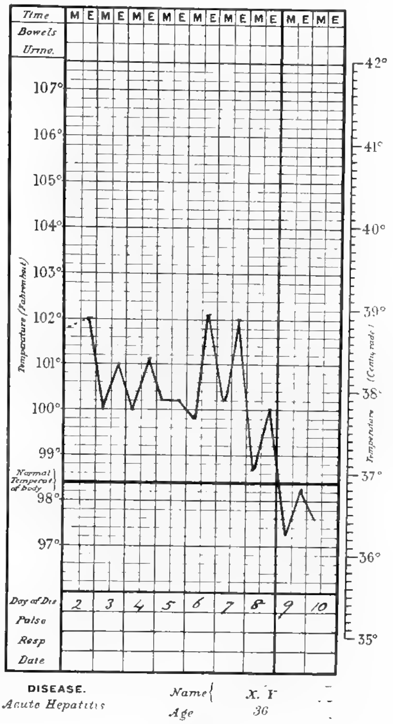

FIG. 117.

When we first examined the patient he complained of great pain in the abdomen of a stabbing nature passing through to between the shoulders. On examination the right rectus abdominis muscle was contracted and hard, and the whole area over the liver was very tender to the touch. The liver itself was considerably enlarged, extending three fingers' breadth below the costal margin. The pulse was steady and of good volume, seventy-six beats to the minute. The face was a little sallow and there was a trace of jaundice in the conjunctivæ. The urine was free from albumin, but gave a faint reaction of bile pigments. The patient was inclined to be constipated and the fæces were very highly coloured with bile. The treatment exhibited was a large mustard plaster over the liver, which gave great, though rather temporary relief, and a calomel purge followed by regular doses of salines.

The pain, though relieved for a time by the mustard plaster, recurred the same evening to a less severe extent, but enough to require the hypodermic use of morphia before sleep could be obtained. A very low diet, as near starvation as practicable, was ordered.

The treatment was followed by a rapid improvement in the pain and tenderness with steady reduction in the size of the liver. On the fifth and sixth days the patient complained of very severe neuralgic headache, but otherwise was decidedly better, and, as stated before, the temperature reached normal again on the ninth day.

The disease is an acute infective process, commencing usually with a rigor. The temperature is maintained between 100° and 102° F. or higher for about seven days, after which rapid defervescence occurs. It will be noticed at once how closely the chart resembles that of other infective diseases. We shall see later how different this temperature is to that of liver abscess. The relation of hepatitis to liver abscess we shall deal with in the next section.

Treatment.—This has been already outlined in the notes of the case given above.

Dietetic.—A diet as nearly as possible approaching starvation to give rest to the inflamed viscus.

Medicinal.—The application of a mustard plaster over the liver. A calomel purge followed by free exhibition of saline aperients.

Absolute rest in bed till the temperature regains the normal.

LIVER ABSCESS.

Syn.—*Tropical Abscess of the Liver.*

Tropical abscess of the liver is usually single and therein differs from the pyæmic abscesses commonly seen in western lands and which we shall not deal with here.

The ætiology of liver abscess is of great importance owing to the confusion in terms which has taken place over inflammatory diseases of the liver. It is *not* an acute hepatitis and seldom if ever a direct sequel of acute hepatitis, except so far as to occur most frequently in the substance of a viscus already damaged by chronic congestion or hepatitis. It is no more in itself an acute hepatitis than is brain abscess an acute encephalitis, it is indeed nothing but the deposit of toxic material in a particular spot in the organ. Indeed it resembles brain abscess often very closely in its difficulty of diagnosis and not infrequent complete absence of symptoms. To justify a statement so different from what is commonly taught on the subject we would insist on the following points:

1. In the case of a small abscess the functions of the liver are not seriously interfered with (cf. Hepatitis).

2. The temperature chart is that of simple septic infection and does not resemble that which we associate with hepatitis.

3. An abscess may remain perfectly latent and only be found at death (13 per cent. of cases according to Rouis). Not rarely an abscess gives no signs or symptoms till rupture occurs.

4. A number of the abscesses (sometimes stated as high as 80 per cent.) are sterile.

5. The abscess is surrounded by a thick pyogenic membrane. The rest of the liver away from the abscess shows, at most, a state of cloudy swelling only, a condition consistent with septic absorption from any other focus.

In fact, the symptoms associated with liver abscess are due to septic absorption on the one hand, and to the mechanical effects of the increasing size of the abscess on the other, and are not the result of hepatitis.

When we come further to examine the more immediate ætiological causes we still continue in a region of fierce disputation. Whether dysentery is the cause, rarely, generally, or always is a matter which still calls forth the most divergent opinions. As a matter of fact, it is a question which has been made much more difficult by the amount of discussion it has called forth. To put the matter simply we have these facts:

1. The infection is through the portal system and therefore arises in the alimentary canal. (We can exclude the spleen and pancreas.)

2. In many cases there is a definite history of recent dysentery, amœbæ dysterica abound in the bowel, in the wall of the abscess, in the liver, and nowhere else.

3. In a varying proportion of cases there is no history of dysentery or diarrhœa, and no amœbæ can be found in either situation.

Our own view of the matter is: all cases of liver abscess arise from infection from the alimentary tract and in cases of amœbic abscess are almost always (if not always) due to amœbic dysentery. When the infection, however; is a purely bacillary one the disease may arise from infection through the unbroken mucosa.

Manson[1] referring to this question says:

> "In a masterly paper Macleod, after a very careful and critical analysis of certain figures bearing on this subject, concludes that dysentery is a factor in nearly every case of tropical liver abscess. In forty cases of the disease observed in Shanghai he had positive evidence of dysentery in all except one; and even in this case, as re-

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[1] Tropical Medicine, p. 490.

covery ensued, there was no certainty that dysenteric lesions had not been present. Perhaps Macleod's conclusions are somewhat too sweeping; I confess, however, that they are, in the main, in harmony with my own experience. Doubtless they apply to liver abscess as met with in Shanghai, and probably in other places."

When, however, we come to consider the parasitology of liver abscess the subject becomes clearer. Amœba coli is the organism most frequently present and according to some observers almost always so. It is, however, not always easy to find, being present not in the pus, but in the lining membrane of the abscess cavity. It can be discovered in this often only by careful search after curetting the wall of the cavity, or it may often be found in the discharge from the cavity two or three days after operation, *i.e.*, when the pyogenic membrane is beginning to come away. In bacillary dysentery the bacilli of Shiga and Flexner may be found in the pus of the abscess, while in other cases bacillus coli communis, staphylococci, and streptococci have been described. Amœbic infection would seem to be the mildest form and streptococcal the most severe, the latter, indeed, proving rapidly fatal.

Clinical Picture.—As the symptoms depend on the amount of septic absorption and the mechanical effects of the abscess, it is very difficult to give a clinical picture of this disease. With a thick-walled abscess cavity from which little or no absorption takes place the temperature may be practically subnormal throughout, and the symptoms confined to vague pains in the epigastric region which will be attributed to dyspepsia. In the case of a thin-walled abscess cavity from which septic absorption is rapidly taking place, the patient will suffer from irregularly raised temperature, remittent or intermittent, with or without rigors, rapid emaciation, an icteric tint, furred tongue, loss of appetite, profuse sweats, diarrhœa, etc. With the progress of the abscess, which enlarges by pressure absorption of the surrounding tissue, a special decubitus is developed, the patient lying on the back or right side with legs drawn up. Pressure and consecutive inflammation give rise to signs in the right pleura of friction and consolidation, if the abscess enlarges in that direction. If, on the other hand, the abscess enlarges in a forward direction it will form a tumor in the right hypochondriac region.

Termination.—Liver abscess may terminate either by rupture, death from septicæmia, or, possibly, may be encysted and dry up, this last must be very rare. In 300 fatal cases tabulated by Waring in 1854, 56 per cent. died with the abscess intact. Rupture takes place in about 25 per cent. of hepatic abscesses. The sites of rupture in abscess of the liver are roughly as follows: Into the lung or pleura about 60 per cent. Into the peritoneal cavity about 20 per cent. Into the stomach

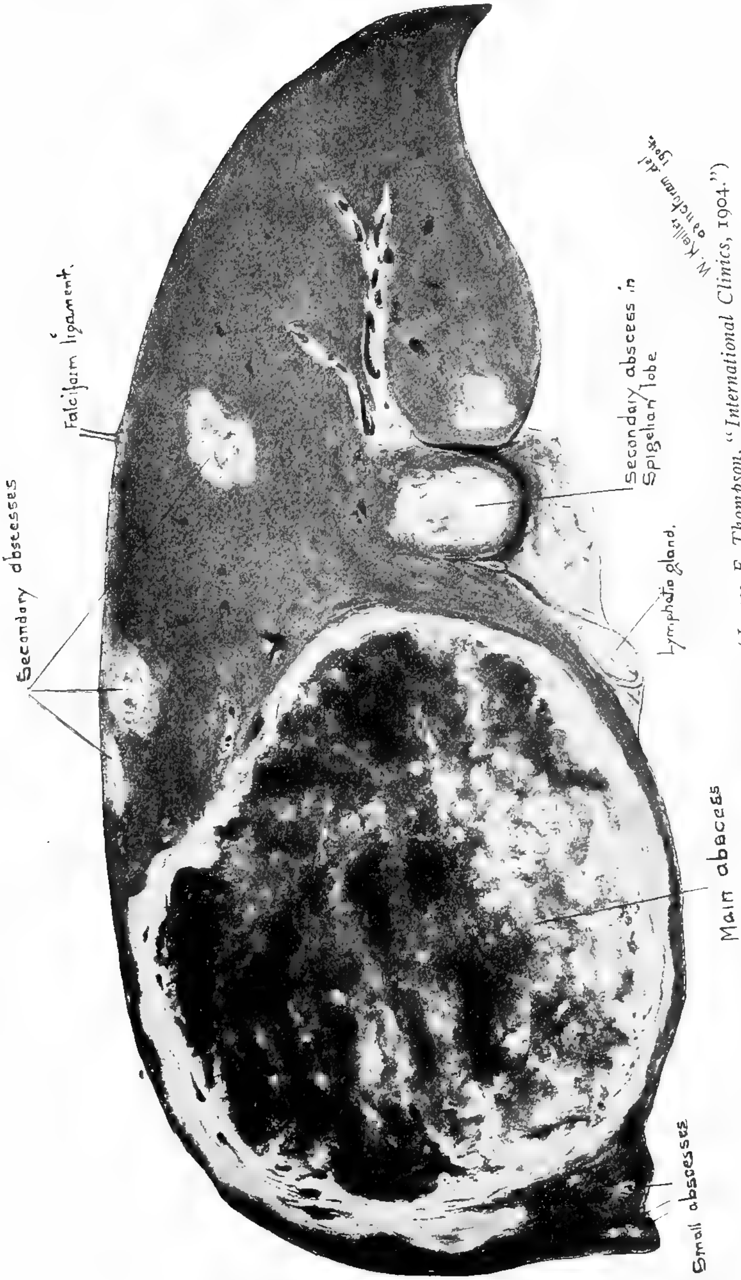

FIG. 118.—Multiple liver abscesses—amœbic. (*James E. Thompson*, "*International Clinics*, 1904.")

or intestines about 15 per cent. Externally 2 per cent. Occasionally into the kidney, inferior vena cava, bile passages, and pericardium.

Rupture into the lung or pleura. Nearly always on the right side. Rupture is usually preceded by basal pleurisy and cough with some consolidation of the base of the lung. The perforation into the lung is usually small, in which case the pus may all be spat up and the abscess in the liver thus cured. In other cases a larger rupture takes place, the lung is flooded with pus and a fatal result takes place within an hour or two. Rupture into the pleura is less frequent than rupture into the lung itself and gives rise to the signs of empyema.

Rupture into the peritoneal cavity may form at first a localized abscess, but usually at once, and always eventually if surgical interference does not take place, general septic peritonitis ensues.

Rupture into the stomach, duodenum or colon gives rise in the latter case to a profuse discharge of pus from the rectum. In the former cases pus will hardly be detected in the fæces, but the size of the liver will diminish rapidly and air may be found on percussion in the abscess cavity.

External rupture is said to be the rarest of all forms, and where surgical assistance can be obtained this is necessarily so. It is probable that as a natural termination of untreated abscess it is much more common than the figures, ordinarily given, lead us to suppose. We have ourselves operated on eight cases where redness and œdema with pus immediately below the skin pointed to an early external rupture had surgery not intervened.

Prognosis.—In cases of ruptured abscess the prognosis varies greatly with the position of the rupture. Thus perforation into the peritoneal cavity is nearly always rapidly fatal; while rupture into the lung is usually regarded as favorable, as many as 75 per cent. being said to recover. Rupture externally is supposed to be favorable, but we decline to accept this view as rupture externally usually means so large an abscess that even after carefully planned surgical measures the prognosis is far from good. When operative measures are undertaken the prognosis depends on the time when such operations are performed. If undertaken early and the drainage is efficient the prognosis is very good, when late and the drainage is difficult the prognosis is bad.

Treatment.—It need hardly be said that the only justifiable treatment of liver abscess is surgical interference at the earliest possible moment. We owe to Macleod of Shanghai, as the first practical advocate of free incision, no little debt in the progress of the treatment of liver abscess. In all cases of doubt the exploring needle should be freely used; the dangers in its use have been greatly exaggerated.

If the signs of abscess are fairly clear but no localising symptoms are present a systematic examination should be made commencing anteriorly and from above downward; the pleura should be avoided if possible, but it is far better to wound the pleura than to risk missing the abscess. The needle may safely be passed to a depth of three inches and if the pus be only discovered with difficulty the needle should be left in as a guide for further operation. The method of operation has given rise to a large amount of discussion; on the one side are the advocates of free incision who hold all else as unsurgical; on the other are the advocates of the trocar and cannula who regard free incision as an unjustifiable risk. It is probable that the proper treatment lies between the two extremes. When the abscess is small and reached with difficulty the trocar and cannula as devised by Manson and described in detail in his book provide a method which is easy to perform, of little danger, and which allows of free drainage, and these points should outweigh any theoretical considerations. When the abscess is large and near the surface free incision is easy and far better drainage can be provided by this method, and as in large abscesses free drainage is an essential to

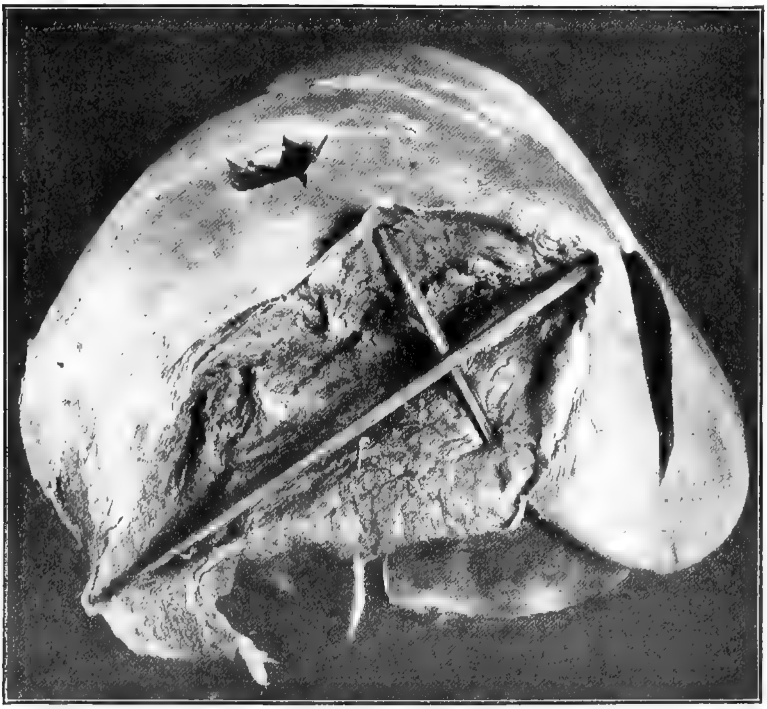

FIG. 110.—Amœbic multiple abscess of liver. St. Luke's Hospital, Shanghai Museum specimen. (*By Jefferys.*)

success we should recommend incision in these cases. If the operation be by incision the peritoneal cavity should be shut off, in cases where the liver is not already adherent to the parietes, by suturing the surface of the liver to the wound or if this is difficult by closing the peritoneal cavity as far as possible with sutures and shutting off the rest with gauze plugging. If the incision be made through the thoracic cavity, two inches of one of the ribs should be excised and the diaphragm stitched to the wound. If the pleura be wounded the hole should be closed with sutures before proceeding with the operation. For a description of the trocar and cannula and their use we would refer our readers to Manson's Tropical Medicine, fourth edition, p. 516.

After-treatment in a favorable case should be confined to changing the dressing and shortening the tube as required, that is, when almost all discharge has ceased; it is important that this should not be done too soon. It must be remembered that the essentials for success are free drainage and the avoidance of further septic infection. The latter can only be insured by great care with the dressing; the former must be obtained, if necessary, in large abscesses opened in front, by a counter-opening behind. If rupture has already taken place into the lung the question of operation becomes a very difficult one and should depend entirely on the progress of the patient. If any progress is being made it is well to delay, but if the patient is evidently losing ground the operation should be undertaken at once. If after operation on a liver abscess septic infection occur we recommend the irrigation of the cavity with a lotion of tinct. iodi ʒii to hot water Oj, or still better to immerse the patient in a bath of hot water with tinct. iodi ℥ss to Oj for twenty minutes to half an hour each day.

Cirrhosis of the Liver.—This is a subject of great importance in China and Formosa. The most important division of cirrhosis, that directly associated with splenic enlargement and conforming to some extent to the picture of Banti's disease is dealt with in Chapter XII. In addition to this we have:

Delayed Congenital Syphilitic Cirrhosis of the Liver.—Considering what a large proportion of the Chinese are infected with syphilis it is surprising that gumma of the liver is not a more common disease. In our experience it is far too rare to demand any description here. The ordinary pericellular cirrhosis in infants is so rapidly fatal a disease that we need devote no space to it. The hepatic manifestations of delayed congenital syphilis do, however, form a subject of some little importance. Enlarged liver in children, the subjects of congenital syphilis with or without associated enlargement of the spleen, is not very rare.

Morbid Anatomy.—The liver is enlarged and often lobulated. The lesions are gummata, cicatrices, fibrosis, pericellular cirrhosis and lardaceous changes in varying degrees and combinations.

The associated enlargement of the spleen when not due to paludial affections is the result of advancing lardaceous disease.

Clinical Picture.—The patient is usually a lad of from twelve to twenty (girls in our experience are less commonly affected), thin and anæmic, of earthy complexion, and stunted both physically and mentally; with scars about the mouth, absence of nasal bones, or other well-marked signs of congenital syphilis. On abdominal examination the liver is found to be very markedly enlarged, sometimes reaching almost to the umbilicus, the spleen is also usually considerably enlarged, but as these unhealthy children are very subject to attacks of malarial fever this is not surprising.

Diagnosis.—This rests on the presence of well-marked stigmata of congenital syphilis.

Treatment.—This is as for tertiary syphilis.

Tropical Abscess of the Spleen.—Abscess of the spleen is far more common than the text-books on surgery or tropical medicine would lead one to suppose, We have ourselves seen three cases in Formosa; Maxwell, Yungchun, reports one case;[1] and Kuhne, Tung-kun, one case, and probably the large majority of cases are never reported at all.

We are at issue, too, with the authorities on the mortality of the disease which the books lead us to suppose is high. As all these cases were successfully operated on, it seems at least very doubtful if this prognosis can be considered a correct one.

Pathology.—Abscess of the spleen may arise as a complication of the acute infective fevers, as typhoid, or as the result of an infective embolus from malignant endocarditis, but these have nothing to do with the subject of tropical abscess of the spleen. In this latter disease the abscess always occurs in a spleen already enlarged, usually greatly enlarged, by chronic malarial infection. As in tropical abscess of the liver, the infection may either be an amœbic one or a bacillary infection, but the actual parasitic causes have never been properly worked out.

Clinical Picture.—Of the five cases mentioned above four occurred in males, one in a female. All were young, between seventeen and twenty-five. All suffered from chronic enlargement of the spleen before any signs of abscess appeared. None of the patients were acutely ill. In amœbic cases, however, the symptoms are, as a rule, much more acute than in bacillary cases.

In all the cases the abscess was pointing on admission to hospital, a large quantity of pus was evacuated, and the spleen rapidly became reduced in size.

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[1] Transactions Soc. of Tropical Medicine, 1908.

Treatment.—Free incision with evacuation of the pus and with or without irrigation of the abscess cavity. As the spleen becomes early adherent to the abdominal wall, there is little danger of opening the peritoneal cavity.

Diagnosis.—From abscess of the abdominal wall over the spleen area, which is sometimes very difficult. In our experience these abdominal wall abscesses are much more acutely painful. They are usually syphilitic.

Chronic Malarial Enlargement of the Spleen.

(SYN. *Ague-cake.*)

In all cases of malarial fever the spleen is enlarged, but after a simple attack of ague it soon regains its normal dimensions. If, however, the attacks of ague are repeated with great frequency some chronic enlargement always results. Finally in cases, especially children, but by no means confined to these, where reinfection with the malarial parasites

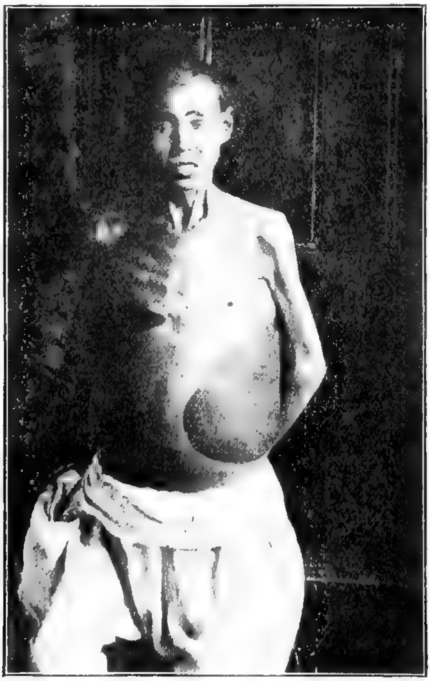


FIG. 120. A case of Banti's disease. (Differentiate from ague-cake.) Liver and spleen marked in India ink. (*By Stooke and Graham, Ichang.*)

is constant, an enormous chronic enlargement of the spleen may occur. It is quite common in Formosa to meet with patients whose spleens reach the right iliac crest, and we have treated one woman in hospital whose spleen was so enormous that the only area left resonant to percussion was a small patch in the right lumbar region. The patients exhibiting such extreme enlargement of the spleen are profoundly affected by their condition. In children development is arrested, genitals and voice remain of infantile type, mentality is below the average, and the general nutrition of the body is extremely poor. Adults react less severely to the disease, but they are constant applicants for treatment on account of general debility and unfitness for hard work, and in women for prolonged absence of menses. The patients are usually, but not always, markedly anæmic. While not necessarily at this stage any longer the subjects of frequent ague, they are always liable to febrile attacks from comparatively slight causes, such as exposure to the sun, slight chills to the system,

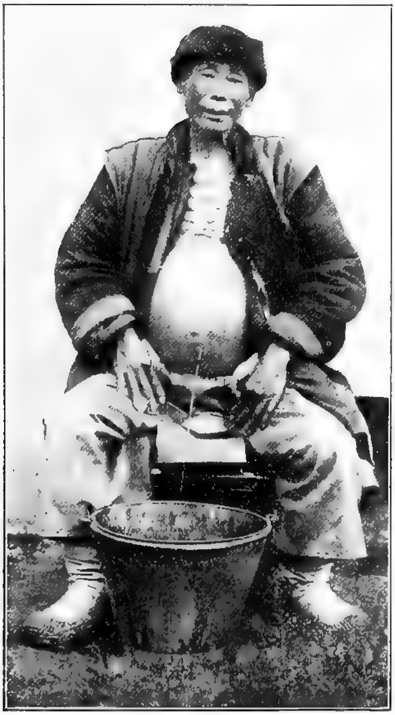


FIG. 121.—One of 204 cases (in a year) of paracentesis abdominis. (*By W. H. Venable, Kiahsing.*)

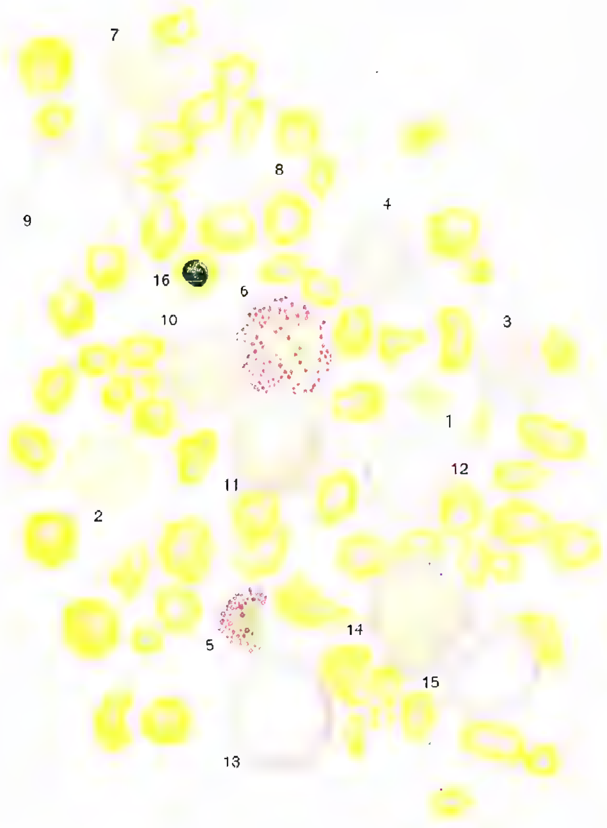
Note.—We have never known of a case of infection in tapping these splenic cases. The usual method is to paint a spot with Tr. iodi and put in a sterile trocar. The skin should be pulled down so that it will afterward close the puncture when the instrument is withdrawn. Cover with Z. O. plaster and strap firmly. (*W. H. J.*)

surgical operations, etc. They have, as a rule, however, lost the sense of raised temperature and will frequently with a temperature of 102° F. or more affirm that they are quite free from fever.

Pathology.—The spleen as a whole is much darker than normal, often of a slaty colour. Perisplenitis is common, leading to large vascular adhesions to the diaphragm and posterior abdominal wall. The capsule is thickened and large fibrous trabeculæ run through the organ. On section it is very dark if associated with recent malarial attacks, and in this case contains much hæmozoin, the pigment carried by the parasites. In cases where malarial attacks have not occurred for some time the colour is less pronounced, and only the yellow pigment of hæmosiderin, common to all diseases where rapid blood destruction occurs, is to be found. It is usually stated that the organ is very friable. This is only true during and immediately after an acute attack of malaria. Otherwise it is, we believe, less friable than the normal spleen, but by being tilted forward against the anterior abdominal wall, it is rendered very liable to injury, and many cases of rupture from a blow on the abdomen have been recorded.

Treatment.—The treatment of the disease may be summed up as, quinine while there are still attacks of malaria going on, and iron and arsenic best administered hypodermically when there is no active fever. External medications may be used, though it is difficult to believe that they can be of much value. The preparations most in vogue are the painting of Tinct. iodi. over the splenic tumour, followed by the exposure of the painted abdomen to the sun's rays and the rubbing in of a small quantity of the red iodide of mercury ointment over the spleen area.

Spleno-medullary leukemia has been reported once or twice in China.



SPLENO-MEDULLARY LEUKEMIA.

(*Triacid Stain.*)

1. **Small Lymphocyte.**
2. **Large Lymphocyte.**
   Contrast this cell with the myelocytes, 10, 11, and 12, noting the presence of neutrophile granules in the latter, and their absence in the lymphocyte. The size and nuclear characteristics of all these cells are practically the same.

3, 4 **Polynuclear Neutrophiles.**

5 **Eosinophile.**
   In this "dwarf" eosinophile, ruptured during the preparation of the specimen, the granules are peculiarly arranged about the nucleus; no signs of protoplasm are distinguishable.

6. **Eosinophilic Myelocyte.**
   [illegible] which the granules are stained.

[illegible]**ytes.** (*Neutrophilic.*)
   [illegible] size (compare 8 with 9), but they all have similar distinc-[illegible]e opalescent nucleus containing a scanty chromatin net-[illegible]ody crowded with delicate neutrophile granules, precisely like those found in the polynuclear neutrophiles, 3 and 4. The nucleus of 7 is distinctly indented and somewhat denser than that of the other myelocytes. This cell probably represents a developmental phase of the myelocyte just short of its transition into a typical polynuclear neutrophile.

16. **Normoblast.**
   The erythrocytes (stained orange) show many evidences of deformity, an occasional megalocyte, many microcytes, and a few poikilocytes being present. Polychromatophilia is absent.

(E. F. FABER, *fec.*)

(*From Da Costa's Clinical Hæmatology.*)

CHAPTER IX.

DISEASES OF THE NERVOUS SYSTEM, WITH SOME REMARKS ON INSANITY IN CHINA.

The practice of western medicine among the Chinese has been, up to the present time, carried on almost entirely by general practitioners, mostly missionary physicians who, whatever the branch of medicine they have most favoured, have been compelled to treat all cases that come in their way and have had but little time to specialise. If follows on this that our knowledge of such a particular branch of the science as nervous diseases constitute has of necessity received far less study than it deserves, and our knowledge of the subject is correspondingly scanty. We have, therefore, adopted the plan for this chapter of following the general arrangement of one of the standard text-books on medicine, emphasising where the diseases are specially common or specially rare as met with in China and Formosa.

1. **Diseases of the Nerves.—Neuritis.**—Neuritis is a condition met with very frequently by all practitioners in the tropical and subtropical parts of China. The commonest causes of this condition are malaria, *v.* Chap. V., and beri-beri, *v.* Chap. IV. The manifestations and treatment of the disease in no way differ from the practice of western lands.

Multiple neuritis, owing to the absence of alcohol as a common cause of disease, is rarely met; it is most commonly seen in silver workers resulting from chronic mercurial poisoning, *v.* Chap. XII.

2. **Lesions of the Cranial Nerves.**—The lesions of these nerves are the same as those met with at home, but on the whole decidedly more rare owing to the relative rarity of brain disease, to which we shall refer later.

Facial paralysis, too, though met with from time to time, is decidedly rare, possibly due to the absence or great rarity of acute rheumatism over a great part of China.

Affections of the vagus nerve due to beri-beri are of course relatively very common.

3. **Lesions of the Spinal Nerves.**—These, too, are relatively infrequent, except as stated above in relation to neuritis. The causes of many of these lesions at home are traumatic, and owing to the little general use at present made of modern machinery in China the causal traumatisms are themselves uncommon.

4. **Diseases of the Spinal Cord.**—**Transverse myelitis** is much the commonest affection of the cord met with in China; indeed, it is a comparatively frequent disease. Spinal caries is frequently seen, and owing to lack of proper, or indeed of any treatment, extreme curvature with pressure myelitis is common. Transverse myelitis due to syphilis, or at least sometimes following so directly on infection as to make this etiology almost certain, is by no means rare. In these cases the symptoms often develop with great rapidity and severity, and in a country where nursing is unknown a few days will be found sufficient to develop a bedsore of enormous area. The treatment of these cases of syphilitic origin should be vigorous, with mercury and potassium iodide. In a number of cases the drugs seem to have little effect, but from time to time a case clears up completely under their exhibition.

Landry's Paralysis.—This disease, very rare at home, is probably rather less so in China. Quite a number of cases have been reported, and we have seen three ourselves in Formosa. The cause in China or, rather, the associated complaint has usually been some venereal disease. The mortality is particularly high owing to the lack of proper nursing and feeding. No case, however, need necessarily be despaired of. One of our own three cases recovered and, though convalescence was very tedious, eventually got perfectly well, although at one time symptoms of glossopharyngeal paralysis had supervened.

Anterior Poliomyelitis.—This disease, relatively common in western lands, is much less frequently seen in China. Cases from time to time present themselves, but they are rather rare.

Locomotor Ataxia.—Syphilis is one of the commonest diseases of China and, as we have already mentioned, transverse myelitis of an almost certainly syphilitic origin is relatively common. We therefore find it difficult to account for the absence, we believe the total absence, of true locomotor ataxia. Among some twelve thousand in-patients and more than four times that number of out-patients seen by us in Formosa, we have not yet come across a single case which in any way could be mistaken for tabes dorsalis, and the same is the experience of our colleague in Shanghai, nor do we know of any well-authenticated case reported from China. As we have already said, the absence of the disease is quite a mystery to us.

Primary Spastic Paraplegia.—Though less common than at home, we have from time to time met typical cases of this lesion.

Disseminated Sclerosis. The remarks made under the heading of Spastic Paraplegia apply equally to this complaint.

Spinal Meningitis. Apart from epidemic cerebrospinal Meningitis, we have seen no cases of this.

Syringomyelia.—This is a disease of very rare occurrence everywhere; the diagnosis would probably be a very difficult one in lands where leprosy abounds.

5. **Diseases of the Brain.**—**Hemiplegia.**—The Chinese on the whole as a race feed very moderately and drink more moderately still. Cerebral hemorrhage is therefore rare—very much less common than in western lands. We think that the same remark may be applied to all the ordinary causes of hemiplegia; they are much more rarely acute than they are at home. One exception must be made to this rule. While yet a rare complaint, hemiplegia in adults under or about middle age is relatively common. This we believe to be due to a syphilitic arteritis of the cerebral vessels leading to thrombosis. Some of the cases seem to be improved by antisyphilitic treatment.

Inflammatory Affections of the Brain.—Encephalitis; abscess of the brain. Both these conditions are rare. It is very difficult to account for the extreme rarity of cerebral abscess. Otitis media is quite common. Antral disease is comparatively rare, abscess of the brain we have never seen. Is this to be considered due to some structural variation in the cells of the temporal bone, or is it due to the relatively mild nature of the majority of septic processes? Compare pyæmia, which is so fatal a disease at home and which is as rarely fatal under proper surgical care in China. We incline to the latter view and think that the uncleanly habits of the poorer classes of the nation tend to produce a relative immunity to septic infection.

Meningitis.—Our opinion is that the disease is less common in China than in England or America, but that it is very far from rare is clear from the fact that in the 1905 Health Reports from Hongkong the deaths of 221 Chinese children under the age of five were reported from this cause. Both the forms, suppurative and tuberculous meningitis, are to be found. Of posterior basal meningitis we have never met a case.

Epidemic cerebrospinal meningitis occurs from time to time in epidemic or sporadic form, but not in sufficient frequency or sufficiently severe epidemics to call for special remark. An epidemic of some severity visited Formosa in 1905.

Tumours of the Brain.—These are of very rare occurrence, exceptionally so, we believe, and this applies equally to malignant, tuberculous, and syphilitic tumours. Again, it is difficult to account for this, especially in a land where syphilis is ubiquitous and tuberculosis appallingly common. We have seen ourselves but one gumma of the brain, in that case involving the corpora quadrigemina. How are we to account for this? The same question applies to all the visceral lesions of syphilis. It would be easy to say that some immunity has been acquired from generations of untreated syphilitics. Against this, however, we have the undoubted fact that from time to time we meet with extremely virulent types of secondary and tertiary syphilis, though the lesions are usually superficial ones. We prefer to state the fact and leave the question unanswered.

Hydrocephalus we meet with in infants in all degrees of severity. It is probably neither more nor less common than at home.

General paralysis of the insane is met with seldom if ever; see the remarks under Locomotor Ataxia.

6. **Functional Diseases of the Nervous System.**—Epilepsy. The Chinese are, on the whole, a phlegmatic race and, among the classes usually coming to the foreign doctor for treatment, commonly of a low standard of education. Yet the fact remains that epilepsy is probably no less frequent in China than it is in western lands. Many cases come to us for treatment, and these react to bromides in the same way and probably the same proportion of cases as do similar patients in other lands.

Infantile convulsions are common, but in South and Central China many of these are due to subtertian malarial infection.

Migraine.—True migraine we have never seen.

Spasmodic torticollis is a rare disease everywhere; it is met with occasionally in China. We have operated on one case by division of the spinal accessory nerve with some success.

Paralysis Agitans.—We have never seen a true case, but it may be pretty closely simulated by chronic mercurial poisoning which is common.

Chorea.—When we touch on chorea we are dealing with a subject of great interest. We have never seen a case of chorea and we believe the disease to be quite absent from South China at least. If we are to accept the pathology that chorea is an expression of the rheumatic poison, the explanation of its absence is quite easy. Acute rheumatism is absent from South China or, if present, it is in such a negligible quantity that it need not be considered. Unless we accept this view of the pathology of chorea, it is very difficult to explain the absence of the disease.

Tetany.—We see an occasional case; of the few we have seen ourselves it has usually been in association with dysentery. But the latter disease is very common, tetany very rare.

Hysteria.—In its major form hysteria is probably absent. Minor cases are, however, met with from time to time.

Neuralgia is relatively rare, but from time to time the convulsive tics are met with and neurectomy and ganglionectomy have to be performed in China as at home occasionally for these cases.

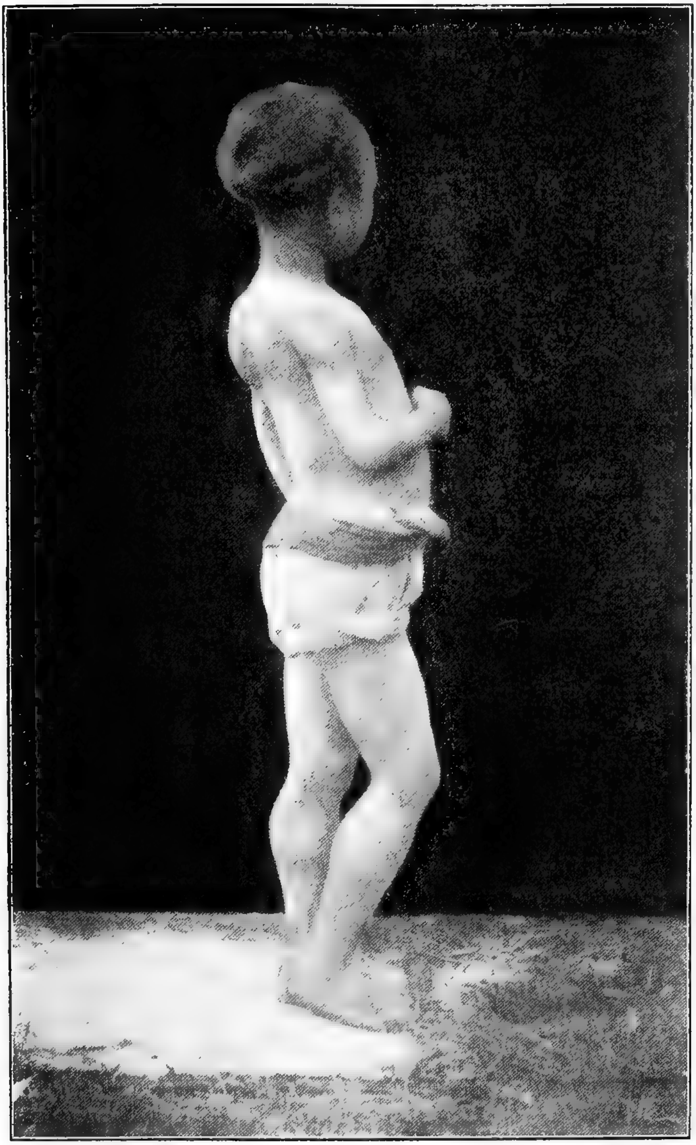


FIG. 122.—Pseudo-hypertrophic muscular paralysis. Five years' duration in a boy eleven years old. (*By J. P. Maxwell, Yungchung.*)

Though not a true nervous disease, it may be mentioned here that **pseudohypertrophic muscular paralysis** occurs and has been reported by several writers.

Insanity Among the Chinese.

Only a few brief lines can be devoted to this subject here.

The reason for this is simple. In the nature of things, insane persons must be excluded from a general hospital, so that the ordinary hospital physician in China, apart from the fact that he usually has no qualifications as an alienist, has further no opportunity of acquiring any knowledge of insanity. We have been unable to lay our hands on a single monograph on the forms of insanity met with among the Chinese: there probably are none. There is only one asylum in the whole of China, the Kerr Hospital for the Insane at Canton.

It need hardly be said that the treatment of insane patients by their own relatives is of the same barbarous nature that characterized the treatment in western lands till a few years ago: chains, fetters, and beatings to restrain their activities and violent purgatives and emetics in the medicinal line.

Despite the impossibility of giving any accurate sketch of the forms of insanity in China, it still falls to the lot of every physician of experience to meet from time to time with these cases, and thus some general idea of the common forms of insanity may be given.

States of Depression.—Melancholia, probably in all its forms, is certainly met with among the Chinese. Both among the heathen and among converts to Christianity we meet with cases of religious melancholia, usually of a recurrent type. Melancholics are perhaps the only class of insane persons whom we are able to admit to our hospitals.

Nervous diseases are not as common as in countries like the United States, England, or France, where people live under higher pressure. But they exist, especially in the form of melancholia of suicidal tendency. -*Coltman*, *Tsinan*.

States of mental stupor are much less frequently met with, and this is probably due to the fact that the rush of life, the hurry of business, and the opportunities for pleasure are all much less in China than in western lands, while the Chinese himself would appear to be, to use a slang expression, less "nervy" than his brother in the West.

States of Exaltation.—Mania is probably the commonest of all forms of insanity met with in China. Delusions of persecution or of fear being often associated with the maniacal attacks.

Fulminating Psychoses are more rare, and it is our belief that both homicidal and suicidal impulses are far less common, or at least far less commonly acted upon, than among such cases in western lands.

States of Mental Enfeeblement.—It is very difficult to dogmatise on this condition with the small amount of evidence to our hand, but we believe that monomaniacs, although met with, are relatively very rare.

Epileptic Insanity.—While epilepsy is common among the Chinese, true epileptic insanity is certainly very rare, if we except from this statement the mental weakness, sometimes to the state of dementia, that accompanies very frequently repeated attacks of epilepsy.

Alcoholic Insanity.—The excessive use of alcohol is very rare among the Chinese and alcoholic insanity therefore almost unknown. But we are told that in some of the treaty ports, where the Chinese are rapidly picking up the unfortunate drinking habits of the foreigner, such cases have of recent years been met with from time to time.

Opium seldom if ever produces this form of insanity, though mental infeeblement in confirmed habitués is almost always present. Morphinism, on the other hand, may lead to maniacal attacks. We have seen delusional insanity in cases of the chronic mercurial poisoning of silversmiths.

Insanity of puberty and adolescence is seldom if ever met.

Puerperal insanity, though encountered from time to time, is relatively rare.

Insanity of the Period of Lactation.—Considering the importance attributed to lactation during profound anæmia and to hyperlactation in the causes of this disease, it is a remarkable thing that in a country where anæmia from chronic malaria and ankylostomiasis is ubiquitous, and where children are seldom weaned for two years, and sometimes breastfed for double that period, this form of insanity is seldom if ever met.

Climacteric Insanity.—It would seem that insanity associated either with the commencement or close of menstrual life is very rare. Jeffreys has seen one case of the latter.

CHAPTER X.

DISEASES OF CHILDREN.

There has been little or **no systematic study** of the subject of this chapter, and what is said is offered by way of suggestion.

Notes on the General Treatment of Children.—The peasants of China are all more or less children and should be treated as such. In the special treatment of Chinese children it must be remembered that there is little parental control of young children, and, except in families educated under foreign influence, the minimum of reliance may be placed on the hope of one's orders being carried out by the adults against the will of the children. A common expression, when seeking permission to operate on a child, is, "The parents are willing but the child is not." With us such need not be considered a serious obstacle to progress, but among the Chinese it is an all but conclusive argument to discontinuance, and the fiat of the child—who should never have been consulted—is frequently the end of all argument. The practical point to be drawn from the above is that all discussion with regard to treatment and operation should be held with the parents but not in the presence of the child, and the matter settled without reference to the child at all. It is usually easy to obtain consent for the child's remaining in the hospital, especially if some member of the family is permitted to stay with it, and consent for operation is readily obtained in most cases, except among the well-to-do. In fact, it is usually easy enough to obtain consent to operate, from everyone except the patient who is to be operated upon.

Chinese children make delightful patients. They respond readily to kindness and are in every way satisfactory from a professional point of view. Not infrequently simply good feeding and plenty of oxygen will work the most marvellous cures. Permission is almost invariably asked to remain with the child in the hospital, and it is far better to grant the request, since, after a few days when all is well and the child is happy, the adult will gladly enough withdraw. Meanwhile, much has been gained. Whereas the effort to argue parents into leaving a child at once and the difficulty of winning the frightened child are enormous.

The Chinese infant usually has a pretty good start in life.

> "Infanticide does not prevail to the extent so generally believed among us, and in the north it does not exist at all." —*Dudgeon, Peking.*

As in the case of other humbler forms of animal life, its early days receive the assiduous care and attention of its mother. For about three years the Chinese child is devotedly cared for, but after that period of absolute dependence its parental attentions undergo marked deterioration and it does a lot of shifting for itself. One gets the impression that most Chinese babies are born with excellent health and are particularly round and fat and chubby; and though congenital deformities are not uncommonly met with, congenital disease is comparatively rarely so.

The Chinese mother knows nothing of modified milk mixtures, and **artificial feeding rarely,** if ever, crosses the horizon of her thought. In the case of the well-to-do if the mother's milk is insufficient, she readily acquires the coöperation of a wet-nurse. In the case of the poor, there is the aunt or the sister-in-law living in the same house with a baby or two of her own, ready to supply the deficiency. We have not infrequently seen the grandmother turned to in such straits—possibly the great-grandmother occasionally takes a turn! For reasons partly of convenience and partly of economy, nursing is protracted, so that one often meets with children from two to three years old and older still nursing, standing between the mother's legs and sucking from her ample breasts.

> "The children are suckled at the breast for about three years. It is astonishing what a greatly increased amount of the milk secretion is attained in China, even by European mothers, by the consumption of a regular daily quantity of well-made rice or millet gruel."—*Dudgeon, Peking.*

Barring tubercular disease and syphilis and an occasional mammary abscess, the **milk is usually of excellent quality,** and there is plenty of it. Sometimes a sweetened rice-powder is sprinkled on the infant's tongue as an adjuvant, but the first steps in weaning are accomplished by the administration of a strained and well-cooked rice-water gruel. Fat is soon added, vegetable broths and so on to table food, including peanuts and pork.

> "The infant mortality in China due to improper feeding, were it known, would astonish the world. This applies to all classes."—*Coltman, Tsinan.*

In the summer of 1906 Dr. Ethel Rowley, of Hankow, discussed the subject of Available Chinese Dietary for Infants[1] and made some excellent recommendations. She calls attention to the **"weazened infant with a large hard abdomen and chronic constipation,** the infant who, in the absence of its natural nourishment, **has been fed on 'kao'** (cakes of wheaten or rice flour, without egg). The flour is mixed with water and baked as a biscuit, and given to the child soaked in water and broken up. This is a starchy diet, without fat and without sugar." She makes several recommendations, firstly, that goat's or buffalo's milk may be advised, and in certain cases the advice will be followed out. As a routine she suggests the following:

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[1] *China Medical Journal,* XXI, 3.

"1. One ounce hemp oil or vegetable oil, to be rubbed in the baby's groin and axilla during the day. Or cotton oil may be administered by mouth—a teaspoonful dose with each feed.

"2. Half a teaspoonful of sugar to be added to each 'kao' feed, the food to be given at regular intervals.

"3. Doses of raw beef juice, giving the formula. This to be given every second or third day.

"4. When vomiting occurs, a gluten diet for a short time. This can be obtained from the ordinary 'mo-mo' or wheat bread, raised with soda and cooked by steaming it. The inside of this cake is put in a saucepan, well covered with cold water, brought to a boil and boiled for a quarter of an hour, then squeezed through very coarse muslin. A little sugar should be added.

As a substitute for this we might add the old well-known flour ball, of which the formula is as follows:

"Take one pound of good flour—unbolted, if possible—tie it up *very tightly* in a pudding-bag; put it in a pot of boiling water early in the morning, and let it boil till bed-time, then take it out and let it dry. In the morning peel off from the surface, and throw away the thin rind of dough, and with a grater grate down the hard dry mast into a powder. To use this, take from one to two teaspoonfuls of the powder, rub it down till smooth with a tablespoonful of cold milk, and add a tumblerful of hot milk, stirring it well all the time." (Children's Hosp., Phila.)

"5. White of one egg, beaten up in some strained cunjee (rice gruel) or 'mi-t'ong' (rice water), and given once a day."

Hydrarg. Chlorid. Mit.

℞—Hydrarg. Chlorid. Mitis,	gr. 1/10.
Sacchari,	gr. i.
M. et ft. tab., No. j.	
Dose—one t. i. d.	

In Class 2, Dr. Rowley places a group of **infants** who, at a few months old, are **receiving something approaching full table diet, with the result of chronic diarrhœa,** loss of appetite, large flabby abdomen, fever, vomiting, and so forth. For such she recommends a judicious dosing with castor oil

Mistura Olei Ricini.

℞. Olei Ricini,	
Glycerini,	āā f℥ss.
Ol. Cinnamomi,	♏1/8. M.
Dose f℥j.	

-*Children's Hospital, Philadelphia.*

and a prohibitive dietary, limiting it at first to albumen water—the white of an egg stirred and the addition of half an ounce cold rice-water and a little sugar; this quantity to be given every two hours. To this may be added raw beef juice.

Mistura Pepsini.

℞.—Pepsini,.		gr. ij.
Acidi Hydrochlorici dil.,		♏iij.
Glycerini,		♏v.
Aquæ,	q. s. ad	fʒj. M.

Dose—fʒj, three times a day in water, after meals.

—*Children's Hospital, Philadelphia.*

The doctor bemoans the high price of milk as compared with the means of the average Chinese, but suggests that in hospital practice a tin or two of imported milk may occasionally be prescribed even if given gratis to the patient. Undoubtedly it would be worth the while of charitable hospitals to arrange, as is done at St. Luke's in Shanghai, for a regular supply of good cow's milk, even though at considerable cost to the institution. This could be used with discretion partly as a life saver, but chiefly as an example to be followed by the philanthropically inclined. Where this is not available, it is customary among many hospitals for Chinese to use large quantities of tinned milk, both for infants and selected invalid feeding. The Chinese as a race dislike the taste of raw milk, but will readily take boiled milk whenever prescribed. They are particularly partial to tinned milk, especially the sweetened condensed milk, for which there is an enormous sale at the present time; and of a large proportion of which, especially that coming from Japan, we mistrust the purity, recommending adherence to well-known brands, such as the Eagle, Bear, Dahl's, and St. Charles'. The Swiss and Norwegian milks are particularly good.

The **malted foods** are available for the wealthy, and much appreciated by them, but they are beyond the reach of even the middle classes. As for **modified milk mixtures,** except in Shanghai and a couple of the other ports, they are absolutely impracticable, by reason of the universal adulteration of the milk, the uncleanliness of the dairies, and the lack of home hygiene, not to speak of the difficulty of arranging the details of use.

"Liachenko has good results in the treatment of acute or subacute gastrointestinal disorders in children with the use of wood creosote, especially where they are accompanied with vomiting and fœtid diarrhœa, above all in cholera infantum. Creosote is, however, contraindicated in dysentery. Liachenko (*Praktitchesky Vratch*, December 20, 1908; and *La Presse médicale*, May 1, 1909) advises prescribing the creosote in the form of a mixture of the following composition for a child one year old:

℞.—Wood creosote,	gr. iii.
Peppermint water,	ʒiss.
Mucilage of salep,	ʒiss.
Simple syrup,	ʒvi.

M. et Sig.: One teaspoonful every two hours (eight teaspoonfuls a day)."

Pulvis Bismuthi Comp.

℞. Bismuthi Subnitratis,		
Pulv. Aromatici,	āā	gr.v.

M. et ft. chart. No. j.
Dose—one powder every four or six hours.

Mistura Bismuthi.

℞.—Bismuthi Subnitratis,		gr. v.	
Tr. Opii Deod.,		♏1/2.	
Syrupi,		♏x.	
Mist. Cretæ,	q. s. ad	fʒj.	M.

Dose—fʒj, every three or four hours.

Mistura Acidi Sulphurici.

℞.—Acidi Sulphurici dil.,		♏ij.	
Morphinæ Sulphatis,		gr. 1/60.	
Elix. Aurantii,		♏v.	
Aquæ,	q. s. ad	fʒj.	M.

Dose—fʒj, every three or four hours.

—*Children's Hospital, Philadelphia.*

Diseases.—The most characteristic anomaly of infant disease in China is **the rarity of rickets**

> "Scurvy, Chinese, none; foreign, four.
> Rickets, Chinese, none; foreign, one."
> *Hongkong Health Reports*, 1905.

which, if seen at all, appears in its mildest manifestation. The effect of the absence of this disease is far-reaching, affecting very considerably the routine of pædiatric practice. This factor, together with the mild manifestations of congenital syphilis in those who survive early infancy and the tremendous prevalence of tuberculosis in the form of phthisis and especially in the form of bone disease, must form the basis of our mental picture of the diseases of children in China. We are unable to explain the absence of rickets along the lines of our preconceived ideas and generally accepted theories of the disease, unless we base it on the prevalence of long-continued breast-feeding combined with the comparatively open-air life of Chinese children and its tendency to the complete oxygenation of waste food products. Possibly the early fruit and vegetable ingredients of infant dietary form a factor of considerable importance, together with the native immunity from the "parcel" food peril.

Bow-legs, knock-knees, square heads, beaded ribs, and the accompanying signs of rachitic malnutrition are frequently seen in Japan but rarely in China. Dr. Rowley has seen one marked case and a very few mild ones in ten years, and our own experiences have been in about the same proportion.

"**Rickets** is seldom seen. Chinese babies are chiefly breast-fed and brought up under conditions which would kill most European children. The staple food of the people is rice, vegetables, fish, and occasionally a little meat, chiefly pork. Unhygienic surroundings, impure air, and rough treatment do not appear to be of so much importance in the production of this disease as deficient and improper food."—*Main, Hangchow*, 1907.

In a very extensive surgical practice we have only once operated for knock-knees, and never for bow-legs in a Chinese. It must be understood, however, that the disease does exist, though it is rare.

"The hospital work was naturally affected by this famine. Wages, clothing, and everything, in fact, in an inland city rise and fall with the price of rice. We have had to help the poorest cases. Many we fear have had to return to the streets often without the prospect of another meal. The impoverished condition of the people means starvation for the little ones. It has been heart-rending to have children coming so frequently with 'cancrum oris' and other diseases following malnutrition."—*Fowler, Hiaokan.*

"**Case of Infantile Scurvy in a Child of Six Months.**—I was called to see this baby because of a swollen and painful knee, which on examination was found to be only slightly swollen, but very painful on movement; the baby crying on the slightest movement. There was no rise in the general temperature, but the affected joint felt hotter than the other. There was some tenderness of the gums present. The baby had, for several months, been fed entirely on proprietary foods, both tinned milk and dry foods. The diagnosis of scurvy was confirmed by the rapid improvement on the following treatment:

Potato pulp beaten up with milk given every three hours.
Orange juice several times a day.
Cow's milk only, instead of the tinned foods he had been having.

"In eight days the swelling had gone down and there was no tenderness on movement."—*Andrew Graham, Ichang.*

Intestinal Diseases of Children.

Dysentery is common. (See Chap. VII.) It is either amœbic or bacillary, both forms being found. In all digestive diseases of children the first step should be routine examination of the stools for all possible forms of intestinal parasites, and after their presence has been determined, a thorough house-cleaning should be undertaken before serious hope may be entertained of curing any form of gastric or intestinal inflammation.

It is a much argued question as to whether **ascaris infection** may be considered detrimental to health. For our own part, we are entirely convinced that in children even in health the presence of a single parasite is a source of nervous irritation, and a strain on the digestive organs. And that a multiple infection is a positive menace to health. There is, perhaps, an absolute intoxication from the worm itself, but more likely an auto-intoxication from faulty digestion, produced by the parasite's presence.

Pulvis Santonini.

℞—	Santonini,	gr. ss.
	Sacchari,	gr. jss.

M. et ft. chart. No. j.

Dose one powder morning and evening, the second to be followed by a purge.

—*Children's Hospital, Philadelphia.*

We reported a baby, eighteen months old, from whom eighty-nine small-sized ascaris worms were recovered at one time, forming a bunch sufficient almost to occupy the lumen of the entire bowel. There were serious symptoms, and threatened convulsions, and a history of considerably protracted periods of indifferent health. Indications of the presence of these parasites, ankylostomum, oxyuris, and tape-worm, and especially in cases of dysentery, *Schistosomum japonicum* should be carefully searched for. Skill in the detection of the amœba should be cultivated by every practitioner.

Mistura Oleoresinæ Aspidii.

℞	Oleoresinæ Aspidii,		♏xv.
	Olei Ricini,		♏xv.
	Olei Cinnamomi,		♏1/4.
	Syr. Acaciæ,	q. s. ad	f℥j. M.

Dose —f℥j, three times a day for one day, to be followed by a laxative if necessary.

—*Children's Hospital, Philadelphia.*

In **amœbic dysentery of children** there are no remedies which compare for an instant with the daily administration of castor oil and frequent high irrigation of the colon with acid quinine solution. In bacillary dysentery, the quinine is useless, and germicidal or merely cleansing irrigations will prove more efficient; nitrate of silver very guardedly in the later stages if necessary. The diet should not be too exclusive or too limited, though in Chinese practice there is little danger of this. It should be soft, but plentiful and very nourishing, eggs, milk, and congee forming the staples. It is imperative to avoid auto-intoxication. The castor oil is a preventive of this and a corrective measure as well. When auto-intoxication is present, watch the kidneys constantly and help them by all means. Occasionally divided doses of calomel will save life in these straits, as well as in distention with atony of the bowels. Never starve dysenteric children after the first week.

CONGENITAL ABSENCE OF THE RECTUM.

Patient.—Chinese baby, male, born in Pootung, January 25, 1909; brought to St. Luke's, February 17, twenty-four days after birth, having had no stool.

Appearance.—Large male child, well-developed bones, skin dry and loose, and other signs of emaciation; mouth exceedingly dry, tongue coated, respiration shallow, anxious, pained expression; abdomen globular, hard, about 21 inches in circumference, thin-walled, blood-vessels showing through the thin skin. One ulcerated point, as from pressure, to the right and above the umbilicus. The abdomen was sensitive to palpation, but large boggy masses could be felt almost throughout.

The mother gave a history of an easy labour, of having nursed the child, as well as fed it upon sweetened rice powder. The child was still able to nurse, though its appetite was small. It had not vomited at all, nor passed any fæcal matter. Urine was passed normally, was dark in colour and heavy-looking as if the kidneys were doing extra work. Examination of the buttocks showed wrinkling in the position of the anus, but no normal perforation. A little to one side was a small opening, through which a probe could be passed and which, it was hoped, might prove a guide to the bowel. But when sounded it bled slightly and was acknowledged by the mother to have been an attempt by a Chinese doctor to open the rectum. He had cut about half an inch deep, and then lost courage.

The condition of the child was poor, but feeling the necessity of doing something, operation was at once undertaken. No anæsthetic was used, and a median incision was made from the anal site toward the coccyx and in the middle plane of the body, extended upward, keeping close to the sacrum. No bulging or other hopeful sign was noted until about 2 inches [quite the length of the rectum at birth] from the skin surface, bogginess appeared in the tissues. This was punctured and a hæmostat passed in. As it was withdrawn fæcal matter followed, and with the help of a salt douche a very large amount of fæcal matter was withdrawn. There seemed to be considerable power in the abdominal muscles, so that continuous streams of fæcal matter, several feet long, were passed. There was no evidence of typical meconium, the motions being distinctly fæcal from start to finish. There was very little hæmorrhage and no complications of any kind ensued. The abdomen collapsed, and within a few days looked fairly normal. There seemed to be some power of retention, and when the child left the hospital a week later it was having one or two regular motions a day.

No attempt was made to bring down the bowel to the skin margin;

this owing to the extreme debility of the child. It might be expected that stricture, more or less complete, should occur in the future, but this need not necessarily take place. At any rate the parents live near by, and upon an older child in better health the secondary operation can easily be performed.

The points of interest about this case do not lie in the condition itself, which is extremely common in China, but appear to us as follows:

1. The twenty-four days which elapsed from birth to the first movement of the bowels after operation.

Literature on the subject does not cover the point, since babies in civilized countries would never be left so long as a week, under any circumstances, without some operative attempt being made. We are told by Garner, of the Margaret Williamson Hospital, Shanghai, that they have many of these cases, but that unless treated before, they usually succumb about the eighth day. Every possible precaution was taken to avoid error about the matter of this baby's birth, and we are convinced that the baby was twenty-four days old before we saw it. We find no report of any case in which the delay was enough to be even interesting as compared with this which is now reported. That a baby could live twenty-four days without having its bowels moved, undergo an operation without anæsthetic, recover, and begin to gain weight, is interesting, to say the least.

2. What happened to the meconium?

Did it become mixed with true fæcal matter, or was it changed by fermentation, or was there none there originally? We are inclined to think the first and second are the correct solutions.

3. The absence of fæcal vomiting.

Babies vomit and regurgitate easily, and that an infant should have had intestinal obstruction for twenty-four days without vomiting, meanwhile continuing to pack fæcal matter into its little abdomen until it looked like a small football, presents another remarkable feature of the case.

4. Finally, the retained expulsive power after so much pressure and thinning of the abdominal wall.

From the operative standpoint we think the following points worth noting:

1. The imperative necessity of unwavering adherence to the median plane of the body and of following the curve of the sacrum; and, we think, the rule of one inch leeway might be considered safe. It should not be forgotten that the baby's pelvis is small and undeveloped, as compared

with the head, for example, and that the bladder sometimes holds considerable fluid. We once assisted in an operation where the surgeon passed his knife into the posterior wall of the bladder, causing urine to flow through the opening—a most unfortunate complication, though not necessarily a fatal one.

2. We should like to state our conviction that the primary operation of lumbar or inguinal colostomy is not justifiable under any conditions that we can think of for imperforate anus or absence of rectum. For the following reasons:

1. The mortality is about 100 per cent. and the result in the remaining minute proportion of successes unsatisfactory from the patient's standpoint. ("Infancy and Childhood," Holt, p. 116.) "Although life may be prolonged by the formation of an artificial anus, the ultimate result is almost invariably fatal; death usually resulting from marasmus during the early weeks of life."

2. It is never necessary except in cases of complete absence of the sigmoid flexure, which gives a very small percentage—perhaps less than 5 per cent. of all cases—and in those few as likely as not there is complete absence of the colon, and the operation therefore hopeless any way. (A baby need not be expected to live without a lower bowel.)

3. Hunting in the dark for the rectum, that is, by the anal route, is not as difficult as it sounds. One does not try to follow a track which doesn't exist. What one does is to cut in the median line in a certain direction, confidently expecting to get there. If the bowel comes down as far as the sigmoid, and all the more so if below it, as it fills with fæcal matter it will occupy the lowest point in the pelvis and therefore be the first thing reached by the operator, unless his luck is exceptionally bad. In such cases as that reported, or those of much shorter duration even, the presenting dome of bowel filled with fæcal matter seemed to fill the brim of the pelvis and could not have been missed by any careful operator. Undoubtedly the bowel should have been drawn down and stitched into the anal margin, as should always be done, except in the case of simple imperforate anus. Suppose that one does find oneself in the peritoneal cavity without having encountered the lower intestine, one then has but to hunt for the sigmoid or any other available part of the lower gut, draw it into the wound, stitch it and open at one's convenience. In other words, if one does get into the gut, one is where one wishes to be. If one does not get in, one has a clean wound and all the chances of success that lumbar or inguinal operations have, with better drainage and a rectum in the place where it ought to be at the end of the day's work.

Tuberculosis is the curse of Chinese childhood, and, as with us, bone and gland tuberculosis are prevalent manifestations. These are frequently multiple. A small boy in St. Luke's, Shanghai, showed double arthritis of the ankles, double arthritis of the wrists, and subcutaneous lesions about both knees and one elbow.

We have the following recommendations to make in the treatment of these children:

Syphilitic and chronic simple inflammations should be carefully excluded, as they both appear at times. If there are glandular involvements as there often are, these patients usually appearing for treatment late in the bone involvement, and metastasis having taken place, one may take for granted that the disease is tubercular. As, for example, a case of our colleague Dr. Tucker, where tubercular metastasis to the axillary glands had occurred from a tubercular osteitis of the thumb. A rigidly careful examination of the lungs should be made, also of the kidneys, as one or both are liable to be involved and to affect the prognosis and the course of wise treatment.

Except in the earliest stages, **Bier's treatment** is a waste of time if the disease is tubercular. It may, however, be tried if the patient's consent can be obtained and the manifestation is really incipient. In these cases, if the tuberculin reactions are positive some hope may be entertained of success. If negative, it is either not tubercular, or the prognosis is doubtful and Bier's treatment will prove a waste of energy.

With regard to **tuberculin** as a test, we may note the following points:

It is now used universally by careful practitioners as an aid to clinical diagnosis, and in China is a valuable and easily applied method. Of the three applications, the ophthalmic reaction is out of date because of its infrequently severe accidents, and the von Pirquet and Moro reactions should be used together on each patient. The latter ointment reaction is the best of the three in most results.

For present-day work in China, **opsonic-index calculations** are not only difficult, but entirely useless. B. A. Thomas, Philadelphia, says that even at home "for practical work most men go by the clinical condition as of better service, and for prognosis the index is worthless."

It should be remembered that Wright's opsonic index method of treating tuberculosis with tuberculin is only applicable to incipient surgical tuberculosis.

If there is lung or kidney involvement, and operation on the lower half of the body is considered, **spinal anæsthesia** is the method of election. Any general anæsthetic is prohibited by experience and common sense. Our success with spinal anæsthesia has been very satisfactory in those cases in which we have practised it. (See Chapter XV for method.) The method is well described in Bickham's *Operative Surgery*, page 538. From fifteen to thirty minims of a 2 per cent. eucaine solution is our preference, injected between the fourth and fifth lumbar vertebræ after one has without any shadow of doubt effectively punctured the spinal meninges, as evidenced by the flow of subarachnoid fluid.

A large experience convinces us of the **inefficiency of partial operations** on tubercular bone and joint lesions by which we mean procedures which break up the natural protections and open up the blood-vessels surrounding tubercular processes. In case these partial procedures are undertaken, the subsequent treatment with **"liniment iod."** (as recommended by Tatchell in the *China Medical Journal* for July, 1909) is to be followed, and will often succeed in inducing the healing of tubercular sinuses, ulcers and operative wounds; but it need not be expected to accomplish more than this.

We have not infrequently seen a rapid general tuberculosis develop after curettement or non-radical operation. Our own preference, except in selected cases, is therefore either for the medical treatment of tubercular bone lesions, or their **radical surgical removal**—in most cases by complete free excision, but in many by amputation, and that high enough to ensure a healthy stump.

Tubercular Glands.—Tuberculosis of glands—1. cervical; 2. axillary; 3. femoral—is common enough and usually of the necrotic variety, breaking down, undermining and infecting the skin, and showing little or no tendency to spontaneous healing. It responds, however, with normal satisfaction to surgical treatment. Very free incisions may be used as the Chinese are comparatively indifferent to cosmetic results. Here again we recommend the post-operative use of liniment iod.

Weir, of Chemulpo, has had very considerable success in tubercular adenitis and in other varieties of adenitis with a treatment consisting of wet dressings of permanganate of potash solution. There is no danger of systemic poisoning, and the method might be guardedly tried in selected cases.

Mistura Ferri Iodidi.

℞. Syr. Ferri Iodidi,	♏v.
Syrupi et Aquæ,	āā q. s. ad fʒj. M.

Dose.—fʒj, three times daily.

—*Children's Hospital, Philadelphia.*

Tubercular meningitis and tubercular peritonitis are among the common manifestations of the disease in children; the former occurring frequently in infants, the latter more frequently between the ages of eight and eighteen.

Phthisis.—Phthisis in Chinese children is an all but hopeless condition, no matter how incipient the process, unless either complete control of the child can be obtained (as in such an institution as that of the English Church Mission under Main in Hangchow), or, in the case of the well-to-do, the patient may be removed to a selected climate, for example, Mohkanshan or Kuling. In the low-lying Yangtse Valley, and we suppose in similar large tracts in the north and south, the conditions of Chinese life render the diagnosis of phthisis and the signing of a death certificate practically synonymous terms. In adults, the condition is bad enough, but not so perfectly hopeless.

Chinese children are subject to the **eruptive fevers. Smallpox** is exceedingly prevalent, probably the commonest of them all, and will present itself frequently in ambulant type in the dispensary. It is difficult to estimate the mortality from smallpox, but this, as reported by the Shanghai Board of Health, is not large.

> "Late in the autumn of both last year and this, dreadful epidemics of malignant smallpox played havoc with the lives of young and old in all the surrounding districts." —*Fowler, Hiaokan.*

Chickenpox is frequently seen.

Scarlet fever in epidemic form has occasionally proved very destructive to life, and being a comparatively new disease in the land is apt to sweep over large districts during the winter months (but is more or less absent in tropical China): and when recovered from, being not recognised by the people as very contagious, takes to its feet so soon as the fever has abated,[1] with the result that one is consulted occasionally for peeling hands and draws the inference of a vast amount of contagion spread about by these infective mortals. Not infrequently also one meets with nephritis with a history of a red eruption and fever of some weeks previous appearance.[2]

> "Scarlet fever is generally very scarce in the tropics. It occurs most frequently amongst European children, in Shanghai (in Hongkong only imported cases are seen)." —*Scheube*, p. 571. [But this is an old story and times have changed.]

Measles is comparatively a rare disease in the north, but common in the south. We have seen it frequently among foreigners, and rarely among Chinese, in Shanghai. It is, however, occasionally found. Possibly on account of its comparative mildness we are not often called in attendance.

> "Measles, too, of a severe type have visited us and have claimed many victims."—*Fowler, Hiaokan.*

Diphtheria is common in Mid and South China, from the coast to Mongolia and Thibet, and is usually of the faucial and tonsilar variety. It is apt to be mild in type in contradistinction to scarlet fever, which is usually severe. Curiously enough, both spasmodic croup and particularly diphtheritic croup are rare in the extreme, and we have never used our two sets of intubation apparatus in our whole experience in China. In the

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[1] It is known as the "seven-day red fever," and as soon as the fever has subsided is considered well.

[2] Milne's eucalyptus oil inunction prophylactic treatment should be practised from the first day of diagnosis, and thoroughly so, for six weeks. It is the only quarantine the Chinese will readily practise at the present time.

Customs Medical Report for 1883, Volume I, Henry records an exceptionally severe epidemic of diphtheria in Ichang and Chungking.

"There has been a severe epidemic of diphtheria: about twenty-five cases have been treated. All the cases treated recovered. Several seen were already *in extremis*. The antitoxin furnished by the Municipal Health Board of Shanghai has been used and found thoroughly satisfactory."—*J. B. Woods, Tsingkiangpu.*

"During the past year I have encountered a number of cases of diphtheria, several in its very worst form."—*Chungking Customs Report*, 1904-5, *McCartney.*

Vaccinia.—Since vaccination has been widely adopted and, as a philanthropic measure, is practised in many native communities at government expense, usually by unskilled practitioners and without any regard for cleanliness, let alone asepsis, severe infection is frequent, amounting sometimes to general septicæmia, not to speak of less dangerous conditions—destructive ulceration, suppurative adenitis, erysipelas, and extensive cellulitis. We may take it for granted also that syphilis and tubercle are likewise inocculated, jointly with the vaccine, at times. We have rarely seen any alarming results of infection in our bi-weekly vaccination clinic, although the conditions are not perfect and after-care is rarely sought. Occasionally, in debilitated children, local necrosis will take place and the resulting ulcer prove slow in healing. But one is often called upon to treat the disastrous results of native government vaccination enterprises. The Chinese believe in the plan, welcome it gladly, and a regular vaccination clinic is a most useful and satisfactory department of hospital work.

Pertussis is exceedingly common among Chinese children and not uncommon among adults. Spring is the favourite season, and there is more or less epidemicity about the occurrence. It is essential that the diagnosis should be made for prognostic reasons, and to avoid serious errors in treatment. The indications are outdoor life and simple measures to relieve the frequency of the spasms. Among drugs, antipyrin and occasionally codein, when indicated, are by far the most efficient. A simple cough mixture containing small doses of codein, antipyrin, glycerin, and so forth, administered before bedtime will usually ensure a fairly good night.

Mumps is commonly seen in the north and in the Yangtze Valley, and not infrequently as a unilateral infection. **A very similar acute inflammatory affection** is quite as commonly seen occurring in the submaxillary glands, as in the parotid. It is exceedingly common among the Chinese, and especially in children, and not infrequently is contracted by foreigners after a short residence in China. It is less painful than mumps and, we venture to predict, of different specific origin, though it is possible that the symptomatic differences might be accounted for by the less hemmed-in position of the submaxillaries as compared with the parotids. The condition never suppurates; is not intensely painful at any time; resolution is rather slow. It is a good rule in China never to incise a parotid or submaxillary tumour in children until the possibility of mumps and of this submaxillary infection are entirely eliminated. It is hoped at some future time to report more fully on the submaxillary infection with bacteriologic findings.

> "During August, September, and October of the year and in November also there was an epidemic of mumps, mostly mild cases, with few complications except, in some cases, orchitis." *Macdonald, Wuchow*, 1905.

Typhoid Fever.—It is the impression of foreign physicians in China that typhoid fever in natives is universally mild, though typical in other respects. In children it is a very mild infection, often overlooked and rarely fatal, though dangerously infectious, of course. Our own opinion is that it is universally found in China, but that the mildness of type is responsible for its rarely coming to the foreigner for treatment, and possibly its frequent overlooking when it does. (See Chapter III.)

Duncan J. Reid, Shanghai,[1] describes an infective irruptive fever accompanied by naso-pharyngeal catarrh, which **somewhat resembles rotheln,** but which differs from that disease in several respects. It is generally preceded for a day or two by a hard, irritating cough. At the onset there is slight malaise and vertigo, perhaps sneezing and injection of the conjunctivæ, with headache. Immediately thereafter an irruption of rose-coloured, slightly raised but flattened papules, which vanish on stretching the skin, appears on chin, forehead, and neck. The back of the pharynx presents the most characteristic and constant symptoms. There is congestion and the mucous membrane is thickened and covered with large red, smooth elevations or granulations. The temperature ranges from normal to 100° F. and rarely reaches 102.5° F. The irruption is hot and tingly or itching, and there is an inclination to scratch or rub it.

By the second day the irruption is extended over body and limbs. The individual lesions somewhat resemble the pink spots of typhoid. Occasionally the papules are confluent and assume the appearance of measles. On running the finger over the skin there is no sensation of roughness, but of a raised condition or irregularity. At the wrists and forearm the papules appear as mere points, or may resemble the irruption of scarlatina. Other conditions remain the same—the tongue normal or slightly furred, cough hard and croupy, but less irritating than on the first day.

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[1] Abstract of a paper on Rubella sinensis, by Duncan J. Reid (Wind Measles or Chinese Measles). From the *China Medical Journal*, Vol. IV, p. 55.

On the third day the irruption has entirely disappeared or may be still traced on arms. Temperature normal while the patient feels well, as indeed he may have done all through the attack. The fauces are less congested, but the pharynx is still granulated and the cough may persist for several days longer.

In only one of Reid's cases was the irruption still visible on the fourth day. No desquamation visible.

The period of incubation is about eight or nine days. Measles does not protect, several patients having the two diseases within a year of each other. There were no complications in Reid's series, except one case of slight aphonia, and occasionally a residual post-pharyngeal catarrh.

The **condition should be differentiated** from scarlet fever, smallpox, measles, rötheln. The chief points of differentiation are, in *scarlet fever* the prolonged irruption, the desquamation, the strawberry tongue, and the great severity of the symptoms. In *smallpox* the delayed irruption, the shotty papules, the lumbar pain. In *measles* the fourth day irruption and its crescentic patches, its complications and sequelæ. In *rötheln* the irruption may last fór eight or nine days, the rather later appearance of the sore throat, and the somewhat greater intensity of the general symptoms. The condition of the posterior pharynx in rubella sinensis is especially to be reckoned on in distinguishing it from rötheln.

At the present date, 1910, the older practitioners in China use the term **"Chinese measles"** in their practice and recognize the condition, but we must confess that we ha'e our doots. Possibly the condition is that described by Escherich, in Germany, as erythema infectiosum. It certainly is not the "fourth disease" of Clement Dukes which has a decided desquamation. If it is not either erythema infectiosum or rötheln, it is an entity, **rubella sinensis.**

Syphilis.—See Chapter XX.

Circulatory System.

A negative characteristic of disease in Chinese children is the almost total lack of finding of acute rheumatic fever, and the consequently limited number of organic heart lesions. We have never seen inflammatory rheumatism in Chinese children, and there are few and doubtful reports of its presence.

> "Acute articular rheumatism is not often met with, but the chronic variety calls for daily treatment."—*Main, Hangchow,* 1907.

In this connection, muscular rheumatism in adults is common enough, and gonorrheal arthritis likewise.

It is worth noting that *chorea* is almost non-existent among Chinese children. The agreement of physicians on this point is altogether in accord.

Kidney Disease.—See Chapter XIX.

Furunculosis.—Furunculosis may be almost considered a special disease of Chinese childhood. It is met with in great frequency and in every variety, from the minute furuncle, the result of infected sudamen or the papillary lesions of prickly heat, to the general and deep-seated furunculosis, resulting in extensive sloughing and loss of tissue from gangrene. The condition is by no means an entity, but dependent on a variety of contributing or individual causes, the commonest of which is the presence of the itch mite. Pediculi and other parasites play their part; malnutrition, anæmia, indigestion, tuberculosis, syphilis—all lend a hand. **The worst case** we have ever seen is represented in the illustration. Over the entire surface of the body were distributed deep pits resulting from local gangrene around furuncular lesions, each one large enough to contain the last phalanx of the forefinger. The case was one of general malnutrition of uncertain origin.

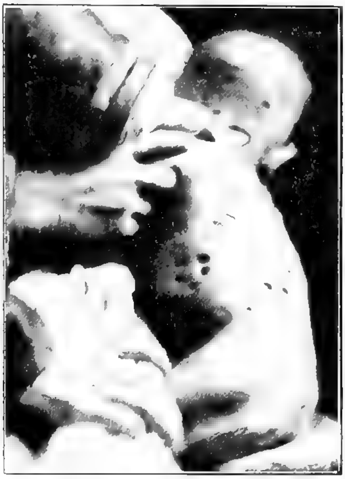

FIG. 123.—Furunculosis gangrenosa Large undermined pits at site of sloughed furuncles (*By Jefferys.*)

Mistura Arsenicalis.

℞.	Liq. Potass. Arsenitis,		♏j.
	Aquæ,	q. s. ad	fʒi. M.

Dose.—fʒj, three times daily.

Mistura Ferro-Arsenicalis.

℞.	Liq. Acidi Arseniosi,		
	Tr. Ferri Chloridi,	āā	♏ij.
	Aquæ,	q. s. ad	fʒj. M.

Dose. fʒj, three times daily.

Children's Hospital, Philadelphia.

Careful effort must be made to get at the correct causation of the lesions, as the merely local treatment of general conditions as well as general treatment of strictly local conditions will prove equally inefficient.

Other useful formulæ[1] in the treatment of Chinese children.

The *doses* of all the formulæ are proportioned for children who have reached the age of *two years*, one teaspoonful (fʒj) being the dose of each preparation.

The following table represents the *doses* for different ages, apportioned according to this standard:

For a child of 6 months and over, 1/4 of a teaspoonful =fʒ1/4.
For a child of 1 year and over, 1/2 of a teaspoonful =fʒss.
For a child of 2 years and over, 1 teaspoonful =fʒj.
For a child of 4 years and over, 2 teaspoonfuls =fʒij
For a child of 8 years and over, 4 teaspoonfuls =fʒss

ANTACID.

Mistura Antacida.

℞. Liquor Calcis,
Aquæ Cinnamomi, āā fʒss. M.
Dose.—fʒj, every hour.

Mistura Magnesii et Rhei.

℞. Magnesii Sulphatis, gr. v.
Tinct. Rhei Dulcis, ♏x.
Syr. Zingiberis, ♏x.
Aquæ, q. s. ad fʒj. M.
Dose.—fʒj, every two or three hours.

ANTIPERIODIC.

Mistura Quininæ Sulphatis.

℞. Quininæ Sulphatis, gr. j.
Acidi Sulphurici dil., ♏j.
Syr. Zingiberis, fʒss.
Aquæ q. s. ad fʒj. M.
Dose.—ʒj, three times a day.

Suppos. Quininæ Sulph. (No. 1.)

℞. Quininæ Sulphatis. gr. ij.
Ol. Theobromi, q. s. M.

Mistura Nucis Vomicæ.

℞. Tinct. Nucis Vomicæ, ♏jss.
Tinct. Gentianæ Comp., ♏v.
Aquæ, q. s. ad fʒj. M.
Dose.—fʒj, three times a day.

Mistura Ammonii Chloridi Comp.

℞. Ammonii Chloridi, gr. ij.
Syrupi,
Mist. Glycyrrhizæ Comp., āā fʒss. M.
Dose.—fʒj, every three or four hours. Shake.

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[1] Largely from Children's Hospital, Philadelphia.

Mistura Antifebrilis.

℞.	Spt. Ætheris Nitrosi,			
	Syr. Limonis,	āā	♏x.	
	Liquor Ammonii Acetat.,	q. s. ad	f℥j.	M.

Dose. f℥j, every three or four hours.

Mistura Potassii Citratis.

℞.	Spt. Ætheris Nitrosi,		♏x.	
	Liq. Potass. Citrat.,	q. s. ad	f℥j.	M.

Dose.—fʒj, every two or three hours.

PREPARATIONS FOR EXTERNAL USE.

Gargarisma Potassi Chloratis.

℞.	Potassii Chloratis,		gr. xx.	
	Glycerini,		fʒj.	
	Aquæ,	q. s. ad	f℥j.	M.

Sig.—fʒj to f℥iij of water.

Gargarisma Potass. Chlorat. et Acidi Carbolici.

℞.	Acidi Carbolici,		gr. ij.	
	Garg. Pot. Chlor.,	(above)	f℥j.	M.

Sig.—fʒj to f℥viij of water.

Garg. Pot. Chlorat. et Ferri.

℞.	Tr. Ferri Chloridi,			
	Acidi Hydrochlorici Dil.,	āā	♏ x.	
	Garg. Pot. Clor.,	(above) q. s. ad	f℥j.	M.

Sig.—f℥j to f℥viij of water.

Gargarisma Sodii Boracis.

℞.	Sodii Boracis,		gr. xv.	
	Glycerini,		fʒij.	
	Aquæ,	q. s. ad	f℥j.	M.

Sig.—j℥j to f℥viij of water.

Toothache Lotion.

℞.	Tr. Myrrhæ,	fʒii.
	Tr. Capsici,	f℥iii 1/4.
	Tr. Opii,	f℥iss.

M. S.—Moisten a bit of cotton with the lotion and lay it on the gum.

CHAPTER XI.

THE OPIUM HABIT AND SUICIDE.

The nature and degree of **harmfulness of the opium habit** as indulged in by the Chinese, that is, as smoked in the opium pipe, has been for many years a well-fought-over battlefield. On the one side we have the classic statement of Dr. Ayres, Colonial Surgeon of Hongkong, "The habit in itself appears to me to be perfectly harmless," and, on the other hand, equally exaggerated statements of the opposite opinion. It would be useless to attempt to follow out the argument. Practical physicians know perfectly well that opium smoking is bad, whatever place they may give it among vices. It is the major vice of China, widespread and permeating.

"The explorations in China in 1900 of Colonel Manifold, Indian Medical Service, described in a paper read before the British Association on September 11th, brought him into contact with opium smoking and cultivation. The visitor's narrative confirms the statement about the extensive cultivation of the poppy in China; and it also shows incidentally, better than a laboured argument might do, *how very different the Opium Commission's Report would have been if the Commission had been directed—as it undoubtedly should have been—to carry on its inquiry and investigations in China instead of in India!*

"At Teng-yueh, where he was detained by the desertion of the mule drivers who absconded with the mules, Colonel Manifold found at the Magistrate's yamên, Mr. Scott, of the Arracan Trading Company, who assured him that it was useless to hope to see the Magistrate before midday, as he was a confirmed opium smoker, and had never slept off the effect of the preceding night's debauch before a late hour.

"Describing the province of Yunnan, Colonel Manifold says:

"It is very rich in minerals, which have as yet been worked by inadequate and primitive means. The present population will never do much, as their energy is sapped by the abuse of opium.

"A long acquaintance with the uses to which the people of India put the drug had led me to believe it did little harm and to be sceptical of the stories I heard of it in China. In India, where it is chiefly swallowed in small pellets and seldom smoked, taken in moderation as it is by the majority of those races given to its use, it is a valuable restorative, and does little harm except to those who become its votaries; and these are, I believe, infinitesimal in proportion to the numbers who make a reasonable use of its valuable properties.

"In Yunnan I saw practically the whole population given up to its abuse. The ravages it is making in men, women, and children are deplorable, and though entirely out of sympathy with the violent views of faddists, and the extreme measures they would resort to in India, I was quite able to realise that anyone who has seen the wide abuse of opium in Yunnan would have an abhorrence of it that would lead them to take exaggerated views of the harm it hid elsewhere. In Yunnan I felt that any measures would be justified that would save an intelligent and civilised population from being wholly demoralised in physique and energy, and from being ultimately extirpated by the fatal abuse of a valuable drug."

Among men, it is met with in all classes, but the higher the class the more generally. Up to very recent times it was practically universal in official circles. Among business folk and shopkeepers, the taipan and the indulged son are generally smokers; but it is found even in the coolie class, and very widely so, though the expensiveness of the habit naturally limits its frequent indulgence in these.

Among women, it is almost exclusively the first wives of the upper classes who are opium habituées. As Hazlep says,[1] "Unless the first wife is so subjected as to be indifferent to all else, she will not permit concubines to indulge too frequently in this fashionable vice." The life of these women is excessively confined and limited; there is no intellectual scope for mental occupation.

"The women are addicted not so much as the men, but from what we can learn from out-patients in the dispensary, I would say that 15 or 20 per cent. smoke. All ages from sixty to ninety years, the infant in arms is soothed to sleep by the parent blowing opium smoke into its face. They seem to be bound, as it were, with chains by the habit, and although they realize its terrible ravages they are helpless to help themselves." *McCartney, Chungking.*

It is curious that prostitutes are not particularly given to indulgence in opium smoking. The reason probably lies partly in that the stupefying effect of the drug is antagonistic to the necessary sprightliness and attractiveness of the individual, and also that the mistresses or owners will, for financial and other reasons, not permit the habit in their slaves.

Among children the habit is rarely seen, though occasionally used to deaden pain in chronic disease.

"A lad of thirteen was in the habit of taking 1/10 ounce of opium a day. His mother smoked, and fed him with it and blew its fumes into his throat, so he was 'to the manner born.'" *Davenport, Wuchang,* 1904.

Although contracted usually **as a deliberate indulgence,** the opium habit is frequently gone into **for the relief of pain,** as in stone in the bladder, in cough, or in phthisis, and the like.

"All painful diseases tempt to the use of the pipe, but the principal diseases for which the Chinese smoke are spitting of blood, indigestion and flatulence, diarrhœa and dysentery, spermatorrhœa and bleeding piles. Socially I constantly meet smokers who claim to have been cured by opium of some one of these diseases, but in a medical way I meet many more who deny any benefit whatever except in the beginning. They all use the same words, "Efficacious in the beginning, but after the yin is formed no luse at all.' The Chinese in this part of the country never take opium as a prophylactic, and I never hear them claim that it will ward off rheumatism or malaria."—*Park, Soochow.*

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[1] *China Medical Journal*, Vol. VIII, page 148.

It is used in the south commonly for malarial neuritis and neuralgia (Maxwell, Tainan). Cousland, in Swatow, noted that out of forty one cases, twenty-three smoked for pleasure, eighteen to relieve symptoms. It is used in indigestion, diarrhœa, spermatorrhœa, piles, cough, pain. It is efficacious in the beginning for the relief of many symptoms, but when the habit is formed, its usefulness is over. It is widely believed by the Chinese to be a prophylactic against malaria, and the question has been frequently discussed among physicians. Park, of Soochow,[1] discusses the question with the conclusion that the more he sees of opium smokers, the less he believes there is any prophylactic value against malaria. Otte, of Amoy,[2] reports various opinions on this subject, every single one of which is negative as regards therapeutic value in the prevention of malaria, and quotes Scheube as mentioning opium smoking as an enfeebling circumstance, predisposing to malarial infection. These views are worth recording, since the opinion of the Chinese on this point is said to be common in favour of its prophylactic value.

The habit is generally **spread all over China,** but not equally so, certain districts being fairly exempt; others, such as Amoy, being all but ruined by the universal indulgence. In country itinerations, certain villages will be passed through which are given over to the habit; others in which it is by common consent shut out; still others which have become practically dead from opium smoking.

The **amount of opium taken** per habitué is exceedingly variable, the usual expression for its measurement in Shanghai is, so many pipes or so many cents' worth. Cousland gives a daily average smoked by his patients as 105 grains; in value the average of fifty-one cases was 17 1/2 cents a day. The minimum was 4 cents, the habit formed one year previously. The maximum was $1.33, the habit formed ten years previously.

"In this part of China a man earns from 15 to 20 cents a day, taking the average of the great mass of the people. Few opium smokers use less than ten cents' worth of opium daily, many use more. A man may exist on five cents a day, but he cannot support himself and family even on twice that sum. The consequence is that the average 'moderate' smoker is insufficiently nourished, his wife and family are half starved, and much misery and wrong-doing result. It may be said this is not the result of the *opium*, it is its expensiveness. To this it may be replied that but for the *habit* or *slavery* to the pipe it would not occur, and therefore it *is* the result of the 'moderate use of opium.'" *Cousland, Swatow.*

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[1] *China Medical Journal*, 1905, XIX, p. 80.

[2] *China Medical Journal*, XXII, p. 225.

"A man from Corea, a victim of the opium habit, was brought into the hospital in an almost comatose condition. He had been smoking forty cents' worth of opium daily but, falling ill, was now unable to roll over the opium lamp the little balls of the drug." *Kühne, Tungkun.*

A patient of our own smoked sixty-four pipes a day, and suffered with ascites and hæmorrhagic piles in consequence. McAll,[1] of Hankow, notes the maximum in his practice as 5 drachms swallowed per day. It will be observed that compared with the amounts taken by De Quincey, or the 50 to 60 grains of morphia consumed by many modern morphinomaniacs, this is moderate in the extreme.

"The most I ever heard of was 6 Chinese ounces (3,500 grains) per day, enough, if taken as a poison, to kill thirty or forty men a day. But in order to make away with this amount he had to swallow about half of it raw. He employed two servants to help fill his pipes, but occasionally during the night, when he did not feel he was getting it fast enough, he would seize a cup of opium, gulp down enough to kill four or five men, more or less, and then go on with his smoking. Of course you will not be surprised to hear that I found him dying when I was called to see him. He died at the age of twenty-four from general dropsy due to impoverished blood, due to lack of appetite, due to auto-intoxication, due to constipation, due to opium inhalation. So far as I know, this is an exceptional amount, but 1 ounce or more (500 or 600 grains per day) is not exceptional. I often meet men who smoke about 1 ounce, and when I am to go to see them, they send special word for me not to come before 4.00 p.m., as they do not get up before that time."—*Park, Soochow.*

In fact, the amount of opium it is possible to consume by the pipe is limited, and it is well-recognised that a fair percentage of the alkaloids are lost in the smoke and ash. Originally, opium smoking was a pastime of the well-to-do, and not regarded as in any way harmful. A man smoked if he had the money to do so. Only within comparatively recent years has a general sentiment of the harmfulness of the habit grown up. And at the present time it is universally recognised as undesirable, if not far worse.

It is well known that the **pathologic findings** in chronic opium smokers are all but negative. Anæmia is usually present. There is loss of flesh in most cases, and certain intercurrent diseases probably are owing to opium cachexia. The most evident evils of opium smoking we have selected from Kerr's list:[2]

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[1] *China Medical Journal* (1903), XVII, p. 4.
[2] *China Medical Journal*, III, p. 143.

1. Its vicious effect on the nervous system, especially in its relation to physical, intellectual, and moral nature of man.

2. Its universal tendency to cause torpidity of the bowels by restricting secretion from the stomach and liver, in consequence of which hæmorrhoids are all but invariable.

> "Many of them live in constant dread of the next defecation, often fifteen days off, which they liken to the pain of child-birth, or of opium diarrhœa, which they dread more than the constipation, and it is understood that no doctor who knows his business will ever give one of them a cathartic. Mr. C—— told me the other day of his brother who went twenty-three days without a motion, then defecated exactly twenty-three days and died. I know of another man, aged twenty-six, whose bowels, so one of his relatives told me, move once only in forty days, nine or ten motions a year! At the end of thirty days he begins to take 'Looking Down' medicine, and when the time finally arrives his servants have to help him with hooks. For obvious reasons I refrain from giving name and address, but both are well known. I never feel much more helpless than when called upon to treat such cases. They have their own ideas as to diet, and to give them drugs is worse than 'carrying coals to Newcastle.' If their disease is a painful one (and they are just as liable to pain as other men are) our sheet anchor for pain will not hold; if constipation, they are afraid of diarrhœa, and if it *is* diarrhœa, scarcely anything will stop it and so on, and yet many of them get well and exist to a good old age."—*Park, Soochow.*

3. A certain sallowness and loss of flesh, attended with slight anæmia, owing probably to impaired digestion.
4. The masking of disease in its early stages.
5. The aggravation of advanced disease and the interference with therapeutic measures.
6. Shortening of life.
7. Economic waste of time, money, work; bringing poverty and want to the family; and the favouring of suicide by familiarity with and possession of the poison.
8. Inability to obtain employment owing to natural prejudice against smokers.
9. National economic waste.

> "It is a wicked waste of wealth, and to my knowledge there are many in this city whose smoke costs them not less than $400 a year and there are many families whose opium bill is over $2000, and at least $10,000 is consumed in many of the yamêns. The average coolie has to pay something like $120 a year for his indulgence."—*Main, Hangchow,* 1904.

An important contribution, perhaps the most so ever made, to the baneful effects of opium was contributed in the form of a pamphlet, "The Effect of Opium on Mortality," by S. B. Neill, F. I. A., F. S. S., Actuary of the China Mutual Life Insurance Company, Limited, Shanghai, 1909. To those interested in the subject it is worth a very careful perusal.

Opium Smokers Admitted to be Cured.

		1901	1903	1904	Total for three years
		96	80	147	323
Age of patients.	14 and under 20 years				31
	20 and under 30 years				111
	30 and under 40 years				96
	40 and under 50 years				54
	50 and under 60 years				18
	60 and under 70 years				13
Amount used per day	Under 1 mace				35
	1 and under 2 mace				84
	2 and under 3 mace				53
	3 and under 4 mace				39
	4 and under 5 mace				46
	5 and under 6 mace				26
	6 and under 7 mace				16
	7 and under 8 mace				8
	8 and under 9 mace				7
	9 and under 10 mace				7
	10 and under 20 mace				1
	20 and under 25 mace				1
Reason for commencing habit.	Pleasure				150
	Temptation				84
	Relief of pain				73
	Relief of disease				16
Reason for breaking off habit.	Want of money				73
	Want of work				75
	Repentance				71
	Exhortation				74
	Disease				30
Kind of opium used.	Native				41
	Foreign				55
	Mixture				227
Where smoked.	At home				47
	At shop				67
	At home and shop				209
Method of taking drug.	Smoking				
	Swallowing				
	Smoking and swallowing				

Opium Smokers Admitted to be Cured.—Continued.

		1901	1903	1904	Total for three years
		96	80	147	323
Duration of habit.	1 and under 2 years				9
	2 and under 3 years				32
	3 and under 4 years				49
	4 and under 5 years				21
	5 and under 6 years				19
	6 and under 7 years				26
	7 and under 8 years				14
	8 and under 9 years				10
	9 and under 10 years				10
	10 and under 20 years				80
	20 and under 30 years				35
	30 and under 40 years				12
	40 and under 50 years				5
	50				1
Admitted for the first time					234
Admitted for the second time					59
Admitted for the third time					27
Admitted for the fourth time					1
Admitted for the fifth time					1
When smoked.	Before food				31
	After food				92*
	Before and after food				191
	Taking in the day				25
	Taking in the night				43
	Taking in the day and night				159*
Occupation.	Artisans				102
	Shopkeepers				66
	Literati				17
	Merchants				37
	Householders				8
	Farmers				54
	Priests				4
	Soldiers				11*
	Servants				21
Cured					216
Doubtful					80
Ran away					27

—*Main, Hongchow.*

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* In certain cases the statistics appear to be incomplete.

The standpoint of the author (Neill) is self-explanatory. He gives a study of 13,336 lives, scheduled and dealt with as they came under observation, and finds as a result of this prolonged and careful study that the actual deaths of opium smokers are in excess of expected deaths by 41 per cent., being, curiously, 16 per cent. north of Foochow, and 61 per cent. south of Foochow down to Singapore. This divergence of findings in the two geographical zones is all the more remarkable since the quantity of opium smoked in the south is on the average rather less than that smoked in the northern zone. It is noted that the company was careful not to take exceptional risks with smokers. No insurance office would take an opium sot, for example. The risk must be what is called a "strictly moderate" one, and on that basis the mortality schedule is made. Again, the risks apply to the wealthy and comfortable classes, since insurers come from these. A reviewer of the pamphlet asks the question: What, then, becomes of the poor, the myriads of smokers who, as the drug habit grows upon them, buy opium when they should buy food?

The author's own summary submitted justified the drawing of the following conclusions: 1. That the mortality experienced by opium smokers is heavier than that experienced by non-opium smokers. 2. That opium smoking is more injurious in tropical than in subtropical or temperate climates. 3. That it would be difficult to trace any particular death to opium smoking, yet it is probable that the digestive organs are primarily affected by the habit, and the smokers become emaciated and lose weight.

Comparison of Expected and Actual Deaths.

Section	Expected death	Actual deaths	Ratio actual deaths / Expected deaths
1	2	3	4
Northern and southern sections combined.	102·3	144	1.41
Northern section	47·3	55	1.16
Southern section	55·4	89	1.61

Causes of Death.

Nature of disease	Non-opium smokers		Opium smokers	
	No. of deaths	Percentage	No. of deaths	Percentage
1	2	3	4	5
Circulatory system.......	15	4	3	2
Urinary system..........	12	3	1	1
Respiratory system.......	83	20	24	17
Nervous system..........	8	2	5	3
Digestive system.........	10	3	15	10
Tropical diseases........	83	20	33	23
Infectious diseases.....	23	6	1	1
Malignant diseases.......	7	2	....	....
General diseases.........	26	6	11	8
Accident................	16	4	3	2
Unclassified and unknown	122	30	48	33
Total......	405	100	144	100

Percentage of Opium Smokers in Districts.

Districts	Non-opium smokers	Opium smokers	Total	Percentage opium smokers to total
Soochow and district......... ...	486	261	747	35
Shanghai and district	2246	784	3030	25
River ports	1138	303	1441	21
Saigon, etc. Siam, etc...........	599	151	750	20
Swatow, Amoy and district.......	426	186	1012	18
Straits Settlements, Java, Sumatra.	3210	638	3848	17
Manila and Philippine Islands.....	95	14	109	13
Tientsin, Peking and district......	487	59	546	11
Foochow and district.............	439	51	490	10
Hongkong, Canton, etc...........	1074	96	1170	8
Rangoon, Calcutta, etc...........	179	14	193	7

Opium versus Alcohol.

This is a difficult comparison. The older opinion was that opium was the more harmful form of vice, but further acquaintance hardly bears this out. Alcohol stimulates, and the nation is not so deadened thereby; but as a promoter of crime, opium is harmless by comparison. In its physical effects, alcohol is far more harmful; morally, there is little to choose between them. In moderation, alcohol is the easier to break away from. In extreme cases there is little choice. Except economically, the opium smoker is not a burden on the community; the alcoholic, both economically and otherwise. Crimes resulting from opium smoking are petty ones thieving, pawning family effects, lying, and the like. Alcohol is a stimulant to sexual indulgence and immorality and a promoter of murder and homicide.

"**Alcohol v. Opium.**—Opium cannot be put on a par with alcohol. Most men may take the physiological quantity of alcohol daily and yet give it up whenever required. It is not so with opium. If a man smokes a small quantity daily for a few months he has formed the habit and cannot easily give it up. With determination he could endure the suffering and break off the habit, but let him go on longer, and his will power, unless in very exceptional cases, has deteriorated so that he cannot. This will show there is no parallel. Opium is much the stronger narcotic poison of the two. The rapidity with which it takes hold of a man in the ordinary run of cases is only parallelled in the case of alcohol in cases where there is hereditary alcoholic history. Whoever heard of 'moderate' drinkers coming to hospitals or asking their physician to break them of the habit? and suffering severely while undergoing the deprivation. The rule, too, after stopping opium is to suffer for many months from muscular pains and cramps, and the great majority fall back into the habit again. A man who had an alcohol habit, so that when the time came round for the accustomed dose he was incapacitated for mental and physical work and who could not give up his alcohol without medical aid and restraint, would not be looked upon by the profession as using it in harmless moderation. This is the case with all habitual users of opium, and serves to put them quite out of comparison with habitual moderate users of alcohol. You *cannot* 'fairly compare,' etc., as the report[1] says.. The only fair comparison would be to place the habitual opium smoker on a par with the man who uses alcohol in more than physiological doses, *i.e.*, an 'alcoholic' or a 'chronic soaker.'

"I do not think the Chinese would take to alcohol if deprived of opium. They have got along without other 'euphonics' than tea and tobacco in the past. Those who stop opium do not take to alcohol." *Cousland, Swatow*

The national conscience of Europe and America does not condemn the use of alcohol in strict moderation, whereas the national conscience of China unhesitatingly condemns all habitual use of opium.

"**How Long does a Person Smoke Before the Yin is Established?** It depends on whether he smokes daily or only occasionally. If daily, one or two months will not go by before the chains are forged and his liberty is gone forever. If only occasionally, he may be one or two years in forming the habit." *Park, Soochow.*

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[1] Final Report Royal Commission on Opium, p. 103.

At the present time a wave is passing over the land in the direction of the **abolition** of the opium habit, the discontinuance of the drug's growth, and the stamping out of the habit; and many influences are being brought to bear toward this desired end. A tremendous sentiment is also evident among the Chinese, desiring to shake off the chains of this their slavery. Officially, matters are lukewarm, but there is a rapidly growing demand for help for individuals desiring to give up the drug.

The **treatment** of those desiring to break off the opium habit (*yin*) is to be found in many text-books, but has varied somewhat within very recent years, and in China is peculiar in some respects, in addition.

First, with regard to suitable subjects. It is an accepted principle among medical men that unwillingness on the part of the patient to submit to treatment is a hopeless barrier to success, and all efforts directed toward over-persuasion are absolutely and entirely wasted. Whereas, if the patient seeks treatment, and is sincerely desirous of success, considerable hope thereof may be entertained. It is the practice of some of wide experience, as Park in the Soochow General Hospital, to lock up all opium-breakers, and forbid their exit or any access to them, save through one responsible guardian or gatekeeper. Park's retreat is high-walled and completely isolated.

"Speaking of his opium refuge, Park says (in 1888): 'To have charge of a roomful of yawning, sleepless, groaning, grumbling, half crazy patients is a position not to be envied under any circumstances, and it becomes doubly hard if you feel that perhaps in less than six months one-half of your patients will, of their own accord, throw themselves back into the pit from which you have rescued them with so much effort. But aside from this, I have more hope of the final perseverance of the few who come now than of the many who came formerly.'"

But the opinion of many is that the opium habit broken under such circumstances of restraint is far more likely to be taken up again than if the restraint is developed in the patient and not in the door-lock. Those who hold this latter view depend on the watchfulness of nurses, the sympathy and encouragement of physicians, and the natural desire of the patient. For these patients, private rooms, or any conditions that promote loneliness, are to be avoided; treatment in the general ward in company with other patients is a distinct help, by occupying the mind and promoting a condition of "face." It is desirable to make it well known to all about the patient that he is breaking the opium habit, and the moral force of observation and the fear of shame are potently helpful.

"After leaving us, do they return to the habit? That lies entirely with themselves, but we can guarantee that on leaving us, they shall have no craving for the drug. Undoubtedly many do start again, but that is a new start."—*Stooke and Graham, Ichang.*

"I think that I am safe in saying that at least 90 per cent. of those who have broken off opium have gone back to the drug in a longer or shorter time, principally within the first three months."—*McCartney, Chungking.*

The method of **sudden withdrawal** should never be attempted on those consuming large quantities of the drug. In selected cases the drug is entirely withdrawn, insomnia combated when necessary with bromides, chloral, sulphonal, trional, and so forth, and looseness of the bowels, if excessive, controlled by astringents, especially bismuth in large (gr. xxx) doses, hot enemata, and other remedies; though in moderate amount the process may be considered desirable as tending to rapid elimination of the drug from the system. The patient should be kept warm and comfortable, elimination by the kidneys and by the skin should be promoted, and diet should be regulated with a view of promoting easy digestion. In the case of tobacco smokers, a moderate indulgence should be encouraged in this. If undertaken, this method should be persisted in, and untoward symptoms, unless extreme, should not be considered a warrant for administering opium in any form, since the collapse of the method is an almost hopeless discouragement to the patient. The attempt to place an immoderate smoker in a padded cell and withdraw all opium at once is cruel beyond description and unwarranted in civilised practice.

"There are **two chief methods** of withdrawing the drug," writes McAll, of Hankow in the *China Medical Journal* for January, 1903, "the sudden and the gradual. The former may be tried in healthy patients under thirty-five who do not take more than 5 grains of morphia per day, or who do not smoke more than 1 ounce of opium. There will be, of course, tremendous discomfort, but very little actual danger to life; one advantage claimed for such treatment is that patients thus treated are very loth to return to a drug it has cost them so much to break free from. But, on the other hand, if the patient should slip back again into the habit, he will not be very ready to put himself under such treatment again, nor will others who hear of his sufferings be tempted to come; . . . and yet another disadvantage is that it puts a tremendous strain on the nursing staff, for such patients will do anything to get outside and obtain more of the drug they want. Those who make use of the sudden method make a special effort to keep the patient under the influence of drugs that will deaden his sensations, and treat special symptoms as they arise. . . . The symptoms that follow when the habit is suddenly interrupted are not difficult to understand, for they are very nearly the exact reverse of a dose of morphia . . . And inasmuch as the victim has developed the power to pour forth gastric and intestinal secretions in spite of opium, he now suffers from a tremendous increase of these secretions, and vomiting and diarrhœa result. Further, he has learnt to keep awake, and now that his opium is withdrawn he suffers from most distressing sleeplessness. Polyuria and bronchorrhœa are often present. Rheumatic pains in the limbs and in the small of the back trouble him greatly. In bad cases there is marked cardiac depression, the pulse getting as low as forty beats per minute. . . . These symptoms are met by tonics, carminatives, and astringents; big doses of sedatives are of service; hot applications to the stomach often greatly relieve the vomiting and diarrhœa; digitalis is of service for the heart failure, and recently large draughts of a dilute solution of soda bicarb. have proved efficacious in relieving the muscular pains.

"NOTE.—In this connection it is as well to call attention to a certain number of curious and otherwise unexplainable conditions which arise in the treatment of Chinese. After certain accidents or in the course of certain diseases, various symptoms occasionally develop, among which nervousness, restlessness, sleeplessness, and diarrhœa are prominent. In many cases the patient will explain that he is an opium habitué, and that they are due to the withdrawal of the drug, which he at the same time asks for. But out of reticence or through diseased mental state or as a result of accident, certain patients will not or cannot own up to the habit. The symptoms evidently are due to sudden withdrawal of opium from regular consumers, and the remedy is the administration of the drug.

"CASE II.—Twenty-odd years of age, single, opium smoker, with congenital inguinal hernia of both sides. Three or four days after the operation (Barker's), on account of not being allowed opium, he suddenly left the hospital, and we have heard nothing of him from that day till this.

"In the gradual method, the system has more time given to adjust the balance of affairs and to desist from attempting to counteract the morphia. . . . The methods of supplying the patient with diminishing doses of the drug are very many. Morphia can be injected hypodermically or some of the various preparations of opium or morphia can be given by the mouth. Nor is it difficult to calculate the amount of any particular preparation required to replace the morphia a patient has been taking. Thus, suppose a man smokes 6 drachms of Szch'uan opium a day, this is equal to swallowing about 1 drachm. Now in the Szch'uan opium there is, say, some 5 per cent. of morphia, so that in 1 drachm there will be 3 grains. In the British Pharmacopœia the preparation called *liq. morph. hydrochlor.* is of the strength of one in a hundred, so that 300 minims, or 5 drachms, of this preparation will contain 3 grains of morphia. Hence it follows that the 6 drachms of Szch'uan opium smoked will be equalled in effect by 5 drachms of *liq. morph. hydrochlor.* taken internally, or 1 drachm of this opium by 50 minims of the solution. As a matter of practice, it is rarely necessary to give the full equivalent: 40 minims or even 30 answer all right in ordinary cases. The exceptional cases are those where the amount of opium smoked per day is comparatively small and where the habit is of a great many years' standing. In such cases it is well to begin to start the reduction from very near the full equivalent. The amount of the right daily dose having thus been calculated, the effect of the initial reduction must be carefully watched, and if there is no marked malaise, no vomiting or diarrhœa the following day, there may be a further reduction made of about one-eighth. In ordinary cases where the patient has been in the habit of smoking not more than 4 to 6 drachms per day, the following plan, which cuts off the drug gradually in twelve days, may be tried. It is very simple, as all the morphia-containing medicine is dispensed for each patient when he first comes in, and does not require to be measured out afresh every day. Calculate the equivalent amount of morphia for the first day, multiply by 6, make it up to 12 ounces with some flavouring agent, such as quassia and water, and give the bottle to some assistant with instructions to keep it under lock and key. Direct him to give the patient 2 ounces per day in divided doses, and every evening, when the daily amount is consumed, tell him to add 1 ounce of pure water. Thus the medicine is reduced by 1 ounce per day, and is at the same time steadily diluted, so that at the end of twelve days the bottle is empty and on the eleventh day the amount of morphia given was extremely small. This method is very useful where there are a number of opium patients in at a time, for it saves a great deal of measuring and calculating every day. Or it may be preferred in some individual case to carefully order each day's reduction as symptoms require, and the following figures will show about the rate at which one may proceed. Taking again *liq. morph. hydrochlor.* as the medicine to be used: if the daily dose is between dr. v and dr. iii, reduce by half a drachm per day; when between dr. iii and dr. ii, come down by 20 minims per day; when between dr. ii and dr. i, come down by 15 minims per day; under dr. i, come down by 10 minims. By this plan we get the following figures:

Amount of opium smoked per day	dr. viii	dr. vi	dr. iv	dr. ii
Cost of ditto (English money) .	1/-	9d	6d.	3d.
Initial dose of *liq. morph. hydrochlor.* .	dr. v	dr. iii. m. 15	dr. iiss	m. 75
Total amount of ditto (ca)	dr. xxxv	dr. xx	dr. xiii	dr. ivss
Total cost of ditto . .	10d.	6d.	4d.	1½d.
Number of days taking ditto .	17	14	11	7

"Our method of treatment is to give them a quantity of morphia about equal to the amount of the native drug they are taking, and we find that 50 minims of the B. P. liq. morph. hydrochlor. is equivalent to a drachm of the native extract. The dose is diminished day by day, and at the same time any other disease they may have is treated; our aim being to get them into as fit a condition as is possible while they are with us, so that they may be better able to withstand the temptation to return to the drug when they leave us.—*Stooke and Graham, Ichang.*

As a rule, the intense craving ceases by the end of the third day in the sudden withdrawal method. In the gradual reduction method this cannot be expected. The **most valuable single drug** in helping the patient through his ordeal is atropin, hypodermically. It is rather curious that this is so, considering that atropin is thought by many to be a physiological antidote to morphine. It does, however, check secretion and stimulate the heart. Another anomaly is the wise use that may be made of morphine hypodermically for inducing sleep, relieving nerve symptoms and intractable diarrhœa. McAll recommends castor oil and large doses of soda bicarb. followed by astringents, like catechu, kino, and lead acetate, or lead and opium pills as a last resort. The patient does not in this case know that he is taking any form of opium, and in the experience of Osgood,[1] Chücheo, they do not delay or alter the time at which the craving for the drug may be expected to cease.

Four prescriptions in common use in China are by:

a. R. C. Beebe (Nanking):

Quinine Sulphate,	dr. xii
H. Ext. Cannabis Indica,	dr. ii
H. Ext. Nux. Vomica,	dr. x
Phosphate Soda,	oz. ii

Make 1280 pills.

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[1] *China Medical Journal*, 1905, p. 55

b. W. E. Macklin (Wuhu):

Quinia Sulph.,	gr. ii
H. Ext. Belladonna,	gr. 1/6
H. Ext. Nux. Vomica,	gr. 1/4
H. Ext. Cannabis Indica,	gr. 1/4

This makes 1 pill.

c. P. L. McAll (Hankow):

Soda Bicarb.,	gr. 20
Pulv. Rhei,	gr. 3
Zingiber,	gr. 10
Pulv. Nux. Vomic.,	gr. 1
Pulv. Digitalis,	gr. 1/2

One powder t. i. d.

This powder is given at 8 a. m.; at 11 a. m. half the daily dose containing morphine; at 2 p. m. another powder; at 5 p. m. the other half of the morphine medicine; at 8 p. m. another powder; and late at night a sleeping-draught, if necessary.

d. O. T. Logan (Changteh):

℞. 3. Liq. Ferri. Perchlor	B.P. ♏v–x
Liq. Strych. Hydrochlor	B.P. ♏iii–v
Aquæ	q. s. ad 1 dram.

A convenient cheap tonic. Useful for patients breaking off opium habit.

Opium Remedies. The markets are flooded with quack remedies of all descriptions, of foreign and home manufacture, and especially of Japanese origin. It is hardly too sweeping to say that nine-tenths of them contain opium or morphine, and but transfer the habit to another form—the patent pill form. And the remaining tenth are practically without value, unless by way of suggestion. In all these cases the remedy is far worse than the disease, and the exploitation of these poor people by this form of patent nostrum villainy demands the serious consideration of all interested persons.

Quoting from the health officer of Shanghai, Dr. Stanley: "The attempt to stamp out the opium habit in China has produced a multitude of anti-opium medicines. Many of these contain morphia, others atropin, and others consist merely of inert matter.

"They may be all classed among the frauds, active or passive. Even in the hands of a specially qualified medical man, the cure of the opium habit by means of drugs is one of the greatest difficulty; that a proprietary medicine could effect such a cure is practically impossible."

The name of these remedies is legion. They are largely of Japanese and native manufacture, but many of them claim so-called respectable foreign firms as their origin. It is conceivable that in selected cases with a pre-existing desire to break off the habit a standard formula without opium in any form might have a limited efficiency. Very recently a proprietary firm has established a "Cure" in Shanghai with branches in other ports, the system being analogous to the Keeley Gold Cure, but probably more efficient.

Reported formula used in the Town's Opium Habit Cures:

℞	Tr. Belladon.	62		℥ii
	Ext. Xanthoxyl Fl.	31		
	Ext. Hyoscyam. Fl.	31	āā	℥i

M. Sig. -8 ♏ every hour until signs of belladonna intoxication are observed. Every six hours increase specific until 14 16 ♏ are being taken every hour. Do not exceed 16 ♏.

Morphine Habit Among Chinese.

Partly as a result of the quack administration of morphine as a cure for the opium habit, and the induction thereby of the morphine habit, and partly as a result of deliberate intention, there has been a widespread sale of morphine pretty much all over China, particularly in the treaty ports and in Szechuan Province, and also the introduction of cheap Japanese hypodermic syringes. Many of these are owned privately and in some cases a reasonable degree of cleanliness and control is maintained. But on the other hand, the habitual hypodermic use of morphine has become a side-practice in the opium dens. The habit has in many cases supplanted the original opium habit as being more convenient and economical of time.

The inevitable result of this practice is an ever-increasing number of Chinese with chronic morphine habit. If it has been acquired in the manner referred to, it may be continued by consumption of the morphine pills or by hypodermic medication as securable in many of the up-to-date opium shops and tea houses of the treaty ports. On the other hand, the morphine habit may have been acquired directly in the opium den, even as a primary affection.

It is not easy to gather reliable information concerning these matters. For a foreigner to appear in person would, in the treaty ports, be fatal to the attempt. Some facts, however, come to us directly in connection with our work. Morphine is indulged in largely, not only by the well-to-do, but also by the coolie class who pay as little as 14 cash (one cent, American) for an injection, which is of sufficient strength to satisfy the ordinary consumer. It is probable that this morphine, so cheap is it, is prepared in Japan from the native drug. The well-to-do may own their syringes and learn to use them with some faint regard to asepsis or, rather, cleanliness, but in the common shops there is no slightest attempt made to protect the victim. The syringe shown in the photograph is of native make. It is an exceedingly crude affair when viewed from our standpoint, though copied from a foreign model, and the needle projects only one-eighth inch and in use is jabbed up to its hilt in the skin of the arm or leg. The instrument, the hands of the operator, and the skin of the patient are not cleansed in any way whatever.

As a conclusion from these premises, the immediate or ultimate infection of the part is assured. In most instances treatment is asked for the infective process, not for the morphine habit.

CASE I.—A coolie; presented himself for the treatment of three medium-sized carbuncles on his back. They were of average severity, but so constantly and deeply under the influence of morphine did the patient keep himself that he made no complaint of pain either in the tumours, or in the arms or legs of which the extensor surfaces were a mass of scar tissue, active furuncles, and ulcers. The position of the carbuncles interfered with his work, which consisted of carrying heavy loads on his shoulders. We made crucial incisions in all three swellings without the patient's seeming to suffer at all. Patient refused to be admitted to the wards, and declined to allow us to try to break up his habit which he "enjoyed," and did not wish to be deprived of. His general condition was septic, and mentally he was dead. Patient probably died at home.

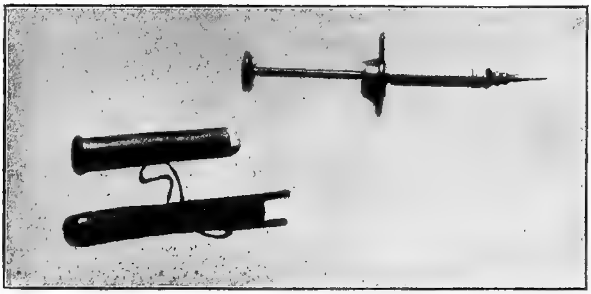

FIG. 124.—Native-made hypodermic syringe for morphine. The box for the tablets was an old cartridge with a roll of paper for a stopper. (*By Jefferys.*)

CASE II.—Was also a coolie. His arms showed the same scarred and actively inflamed condition. Over the shoulder was the cavity left after the separation of a large slough, due, of course, to septic cellulitis. Recovery from condition took place with much scarring. (*Cases reported in the N. Y. Med. Journal.*)

In the **treatment** of the morphia habit much is gained if one can get not only the cordial coöperation of the patient, but can also get him to understand the rationale of the method employed. We find that the following plan is usually successful in regard to both these particulars, and can heartily recommend it.

The patient after admission is allowed to continue the unrestricted use of the drug for a day or two until the hospital is no longer strange to him. We then measure the amount of morphine that he takes at one injection; this we find he usually dissolves in from 40 to 60 minims of water. We then weigh out in his presence enough of the drug to make a 1-ounce solution of the full strength, and put it in a bottle of that size (very rarely, in extreme cases, we use 2 ounces). His syringe and all his morphia is now taken away from him and we tell one of our assistants, in the presence of the patient, that he is to take charge of the bottle of morphine solution and the syringe. At the same time we tell the patient, in the assistant's presence, that at any time of day or night he may call the assistant to give him a hypodermic injection, but he must clearly understand that every time the injection is given the bottle will be filled up with plain water. Therefore the more he exerts himself to withstand the temptation the longer he will have the drug to fall back upon. We find that the patient quite enters into the spirit of the treatment, and, as

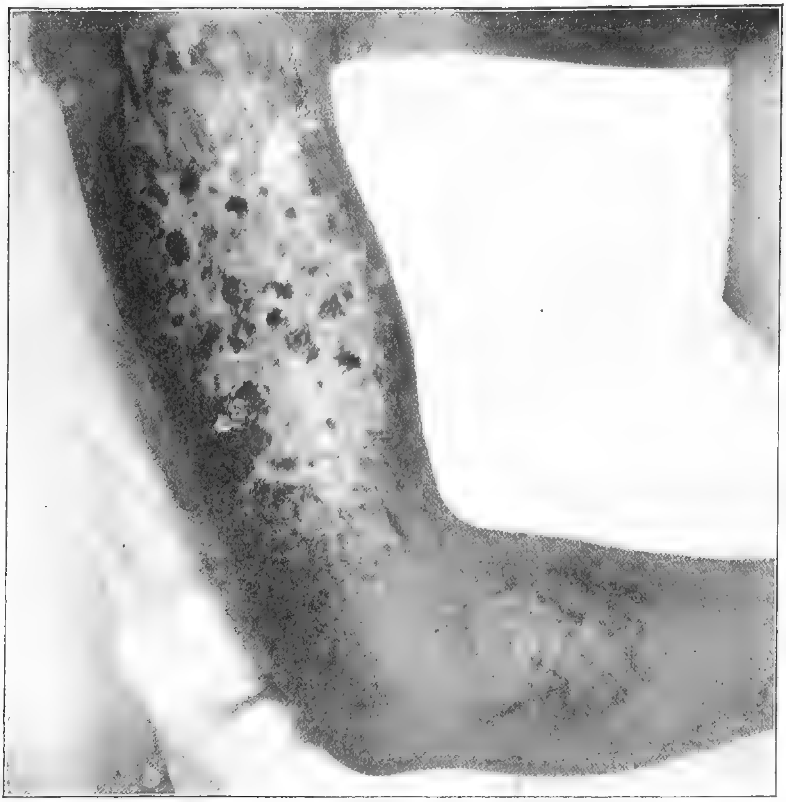

FIG. 125. Arm infected and scarred from morphine injections. Both arms were in the same condition. (*By Jefferys.*)

a rule, long before the morphine in the bottle has reached a negligible quantity, he has ceased to require the injections at all.—(*Treatment by J. L. M.*)

Opium Suicide and Treatment.—Every nation has its favourite method of suicide. With the Chinese it is an improvement on sulphur matches, pistols, and bed-post hangings. They take opium. Next in frequency comes drowning; then perhaps throat cutting and hanging; and, lastly, stabbing. We believe that the Japanese prefer jumping from heights, as at the Kinon Waterfall, or down the crater of Asamayama or down wells.

"Suicide seems to become epidemic in some regions. I remember one summer in Weihsien we had two or three attempted suicides daily, all from one circle of villages. Opium, hanging, arsenic, and phosphorus matches were the favourite methods employed."—*Coltman, Tsinan.*

Suicide is extremely common, and for the most trivial causes, next to quarrels, debt being the commonest. We remember a fine, healthy woman of twenty-two who killed herself with opium because her mistress reproved her for failing to clean a commode properly.

"'Why did she take the poison?' we ask. 'For a matter of six cash!' they say. She had been given twenty-six cash to buy two ducks' eggs, and, returning with the eggs, but no change, she was charged with keeping six cash. At this she grew furious and said, 'All right! you call me a thief!' and down went the opium." --*Cattell, Soochow*

A Chinese Formula.—"But these general statements may fail to give an adequate idea of the methods of Chinese medicine, so let me set down here an actual prescription given by a Chinese 'doctor' for a man who had taken an overdose of opium. The patient was slowly dying of the poison, but the doctor sat by him holding his pulse for about two hours and then ordered this remedy, which required nearly half a day to prepare:

"' 2 couples of salted lizards, two male and two female
1/2 ounce of Corea ginseng root.
6 dried grasshoppers, three male and three female.
1 ounce sweet potato stalks.
1 ounce walnuts.
1/2 ounce lotus leaves.
1/4 ounce tail of rattlesnake.
2 ounces black dates.
1/2 ounce elm-tree bark.
1/2 ounce devil-fish claw.
1/2 ounce hartshorne.
1/4 ounce of birds' claws.
1/4 ounce dried ginger.
1/2 ounce old coffin nails.

"'The whole to be mixed with two quarts of water and boiled down to half the quantity. Then let the patient drink the mixture as quickly as possible.'

"Whether the patient lived until the remedy was ready, I do not know, but if he did, it would seem certain that the remedy itself would complete whatever the poison had failed to do. No wonder patients are often brought to the hospital seriously ill and occasionally stark mad from 'Chinese medicine.'"—*Woodward, Anking.*

In St. Luke's Hospital, Shanghai, the average of opium poisonings brought in for treatment is more than one a day. In the year 1906, 490 are reported. This includes attempts as well as successes, and even some fake attempts; for not infrequently there are no physiological signs of the drug's ingestion, and stomach washing is negative, yet the patient will insist that he took the poison. It is merely an attempt to frighten someone and gain a diplomatic advantage. One therefore meets with every stage and degree of opium poisoning, though the majority are late and such as mean business. Main (Hangchow) reports having treated sucides as follows, during the years 1901, 1903 and 1904:

Suicides.—Total Cases, 663: 405 Male, 258 Female.

		Total for three years
Poison used.	Opium	588
	Salt	11
	Goldleaf and rings	25
	Mercury	3
	Lin. A. B. C	3
	Unknown	28
	Arsenic	2
	Nitric acid	1
	Silver chain	1
	Tr. iodine	1
Age of patients.	2 years	1
	4 years	1
	5 years	1
	7 years	1
	10 years and under 15	13
	15 years and under 20	53
	20 years and under 30	110
	30 years and under 40	233
	40 years and under 50	86
	50 years and under 60	69
	60 years and under 70	32
	70 years and under 80	3
	Unknown	50

Suicides.—Total Cases, 663: 495 Male, 258 Female.—Continued.

		Total for three years
Amount of opium used.	Under ½ mace	45
	½ and under 1 mace	43
	1 and under 2 mace	100
	2 and under 3 mace	162
	3 and under 4 mace	133
	4 and under 5 mace	48
	5 and under 6 mace	19
	1 ounce	13
	1½ ounce	3
	Unknown	107
Reason for attempting suicide.	Quarrels	484
	Poverty	40
	Insane	1
	Accidents (children)	3
	Old age	6
	Disease	8
	Debt	32
	Grief	11
	Gambling	8
	Ill-treatment	36
	Unknown	39
Saved		558
Died		77
Dead on arrival		48

In places the statistics appear incomplete.—*Main, Hangchow.*

Treatment may be divided into two parts: for those in which the opium is in the stomach; and those in which it has already been absorbed, at least in part.

The theory and diagnosis of opium poisoning may be found in many text-books. We give here the practical plan of treatment followed in the large service at St. Luke's Hopsital, Shanghai.

Early Cases.—If the patient is willing for treatment he is not restrained. He is seated in a straight, stiff chair, tablets (always kept at hand) of zinc sulphate are dissolved in tepid water, in quantity of 15 to 30 grains to a cupful. The patient rapidly swallows this, and after a moment's pause, one nurse holding his head, another begins to administer tepid water by the bowlful. After three or four bowlfuls, vomiting begins and keeps up. In all, the stomach is filled and emptied several times, and until the return is clear and entirely free from all brownish tint. After a short interval, when the stomach has become quiet, 10 to 15 grains of potassium permanganate are given in solution and left in the stomach; a hypodermic of atropin and strychnine is given and the patient kept under observation according to indications.

In case of resistance, and unwillingness for treatment, the patient is strapped in a high, straight chair and held firmly by the cue. If the zinc and water are refused, the nose is held until the mouth opens. If resistance persists, the mouth-gag is placed and the stomach-tube passed, when the solution is poured through a funnel into the stomach at the free-will of the operator. Otherwise the treatment is the same.

> "I formerly spent much time prying patients' mouths open in order to introduce the stomach tube in cases of opium poisoning, but now quietly pass a tube through a nostril —if one is small the other will, in all probability, be large enough —and thus save much nervous energy, broken teeth, etc." *Logan, Changteh.*

In case of unconsciousness having been already reached, or even a certain stage of torpor, the stomach will often refuse to react to the zinc, and after the attempt has been made, or, according to judgment, without making the attempt, the stomach pump should be at once passed and the stomach completely and thoroughly evacuated and washed out.

Zinc as an emetic, potassium permanganate as the chemical antidote, atropin as the physiological antidote—these with respiratory stimulants, of which strychnine, cocaine and caffein are best, make up the pharmacology of opium poisoning.

All cases of opium poisoning that shew any degree of absorption of the drug require respiratory stimulants, and the majority of them artificial respiration. The various methods used to resuscitate the drowning are applicable, but have the same drawbacks in opium poisoning as under other circumstances. They expose the patient and greatly weary the operator. It is important to keep these patients warm, and sometimes the artificial respiration must be persisted in for many hours. Cochran* (Hwaiyuen) refers to cases in which respiration is so affected that artificial aid is necessary. These, under the previously noted methods of treatment, usually die, the result being directly due to paralysis of the respiratory centre.

> "Their course is very characteristic. Drowsiness is accompanied by shallow and infrequent respiration and moderate cyanosis; these symptoms become progressively graver; drowsiness becomes stupor, from which the patient can be aroused with increasing difficulty and finally passes into coma; cyanosis becomes more marked, and is accompanied by pallor; respirations are infrequent, perhaps only three or four a minute, and are sometimes of the Cheyne-Stokes type; as cyanosis deepens, the pulse becomes weaker and more rapid; some cases have clonic spasms; just before death, the pupils, which have been contracted, enlarge."

***China Medical Journal*, November, 1905, 'Artificial Respiration in Acute Opium Poisoning," by S. Cochran.

Cochran considers that Sylvester's method, while improving the condition of the patient, does not in the vast majority of cases supply sufficient oxygen to more than delay the fatal termination. He therefore strongly advocates the method of supplying air by bellows to such patients as are overcome by paralysis of respiration. It is G. E. Fell's (Buffalo, N. Y.) method for use in chloroform poisoning, and consists of a bellows and a rubber tube leading to a laryngotomy tube introduced for the purpose. Description is as follows:

> "To avoid this additional operation, Dr. Joseph O'Dwyer of New York made an adaptation of the laryngeal tubes he had invented for the treatment of diphtheritic croup. The bellows, which are operated by the foot, have (as now manufactured) a chamber for a wet sponge to moisten the air delivered. They are attached by rubber piping to a metal tube provided with changeable tips to fit any larynx. There are no valves, but the physician's thumb is placed over an opening in the tube during inspiration; on lifting the thumb the elasticity of the chest walls causes a prompt and complete expiration. With each stroke of the bellows an adequate amount of air enters the chest, and is in turn immediately expired. In cases of respiratory paralysis from opium poisoning the effect is striking. Almost at once the cyanosis disappears, the lips assume their usual rosy colour and the pulse generally approaches normal in rate and quality."

Cochran insists on the persistent use of the apparatus as the only hope in desperate cases, and quotes ten who were all carried through the period of respiratory depression and breathed again in a manner approaching normal. He calls attention to two legitimate objections to its use: first, it is severe on the larynx; and, second, it needs familiarity with the anatomy of the throat, and is therefore difficult of application by the Chinese assistant.

Every hospital in China should possess such an apparatus as well as an efficient and practical stomach pump.

> "The following scheme worked well: Application of the two poles of a faradic battery strong enough to cause good muscular contractions. These were applied at different parts of the body, when the patients were not expecting it, and kept them awake at little effort on the part of the physician. Some of the more violent methods of procedure, as fast walking, were contraindicated on account of advanced pregnancy and very small feet in one patient.—*Edgar Thomson Shields.*

Muat (Port Edward, Weihaiwei) tells us that in the neighbourhood phosphorus (match heads) is the favourite form of poisoning for suicidal purposes, with arsenic a good second.

The Treatment of Phosphorus Poisoning.—Old oil of turpentine is considered one of the best antidodes for phosphorus; it may be prescribed in a partially emulsified form as follows:

℞.	Oil of turpentine,	ʒiiss
	Acacia mixture N. F.,	℥viiss
	Syrup of bitter orange peel,	℥iiss

M. et Sig.—One-third to be taken at a dose.

Needle-swallowing is not uncommon. From one patient's stool (a small boy) our assistant, Tyau, recovered twelve needles of foreign pattern which had been swallowed. More were expected but the patient did not return. There were no symptoms from the affair up to the time when last seen.

"One woman swallowed needles in order to frighten her family but took the precaution to roll them up first in paper."—*Eich, Tungkun.*

Imperial Decree against Opium.

"Since the abolition against opium the poison has spread through the country until it is almost over all China. Those who become addicted to the habit are known to have wasted their time, neglected their trades, ruined their constitution and even squander their property, because of it. For the several tens of years since this condition of things China has become poorer and poorer every day, and it makes us deeply indignant to speak of this matter. As the Throne is now determined on the cause and on reform, it becomes incumbent upon us to exhort our people to stop the pernicious habit, pluck out this cancer which is eating deep into our bodies and strive for an era of physical strength and harmony. We, therefore, hereby decree that a limit of ten years be given from date to entirely get rid of the bane of opium smoking, and we hereby further command the Council of State Affairs (Chêngwuch'u) to consider measures about the future strict prohibition of the habit and the planting of the poppy plant throughout the Empire, and report the same to us for approval."

Opium Regulations.

"It is understood that in accordance with the Imperial Edict of September 20, the Grand Council of State have made eleven recommendations to the Throne in regard to the regulation and speedy suppression of the opium habit; that these have received the imperial sanction and will be promulgated at an early date. The proposed regulations are:

"The cultivation of the poppy and the use of opium are to cease within ten years.

"The cultivation of the poppy may not be extended beyond its present limits; it must be restricted annually by one-tenth of its present area. In the event of any evasion of this regulation the land of the cultivator is liable to be confiscated. On the other hand, if the cultivation is ceased earlier, rewards will be given.

"All persons using opium must be registered either at a yamên or with their village headman. No unregistered person may purchase opium. No person may commence the use of opium after the issue of these regulations.

"Methods must be devised for decreasing opium smoking by persons addicted to the habit. Those above the age of sixty years will be treated leniently. Persons under sixty years of age must decrease their smoking by 20 per cent. annually. Persons who evade this regulation will be punished.

"All shops selling opium will be closed gradually. All places where opium is smoked on the premises will be closed within six months. All sales of opium smokers' requisites must cease within one year.

"Opium divan taxes must not be collected from one month after the issue of these regulations.

"All opium shops must be registered officially with a view to their gradual closing. No new opium shops may be opened.

"All persons purchasing opium must present their tickets of registration and all shops must submit annual statements showing the decrease in their sales.

"Local officials must arrange to assist the people addicted to the use of opium by distributing at cost price or gratis suitable medicines which are not to contain opium or morphia.

"Anti-opium societies will be officially encouraged. All officials are directed to assist by their example in enforcing these regulations. Those who faithfully carry out the wishes of the government will be rewarded. All officials ought to set example to the people. Those above sixty will be treated leniently. Special arrangements will be made to allow princes, dukes, viceroys and Tartar generals to provide substitutes for their posts during the period of their cure. All officials under sixty must abandon the habit within six months; if they cannot do so they must retire."—*North China Daily News.*

THE OPIUM COMMISSION.

Text of Resolutions.

"The following are the resolutions adopted by the International Opium Committee to be submitted to the respective governments represented:

"*Be it resolved:*

"1. That the International Opium Commission recognizes the unswerving sincerity of the government of China in their efforts to eradicate the production and consumption of opium throughout the empire; the increasing body of public opinion among their own subjects by which those efforts are being supported; and the real, though unequal, progress already made in a task which is one of the greatest magnitude.

"2. That in view of the action taken by the government of China is suppressing the practice of opium smoking, and by other governments to the same end, the International Opium Commission recommends that each delegation concerned move its own government to take measures for the gradual suppression of the practice of opium-smoking in its own territories and possessions, with due regard to the varying circumstances of each country concerned.

"3. That the International Opium Commission finds that the use of opium in any form otherwise than for medical purposes is held by almost every participating country to be a matter for prohibition or for careful regulation; and that each country in the administration of its system of regulation purports to be aiming, as opportunity offers, at progressively increasing stringency. In recording these conclusions the International Opium Commission recognizes the wide variations between the conditions prevailing in the different countries, but it would urge on the attention of the governments concerned the desirability of a re-examination of their systems of regulation in the light of the experience of other countries dealing with the same problem.

"4. That the International Opium Commission finds that each government represented has strict laws which are aimed directly or indirectly to prevent the smuggling of opium, its alkaloids, derivatives and preparations into their respective territories: in the judgment of the International Opium Commission it is also the duty of all countries to adopt reasonable measures to prevent at ports of departure the shipment of opium, its alkaloids, derivatives and preparations, to any country which prohibits the entry of any opium, its alkaloids, derivatives and preparations.

"5. That the International Opium Commission finds that the unrestricted manufacture, sale and distribution of morphine already constitute a grave danger, and that the morphine habit shows signs of spreading: the International Opium Commission, therefore, desires to urge strongly on all governments that it is highly important that drastic measures should be taken by each government in its own territories and possessions to control the manufacture, sale and distribution of this drug, and also of such other derivatives of opium as may appear on scientific inquiry to be liable to similar abuse and productive of like ill effects.

"6. That as the International Opium Commission is not constituted in such a manner as to permit the investigation from a scientific point of view of anti-opium remedies and of the properties and effects of opium and its products, but deems such investigation to be of the highest importance, the International Opium Commission desires that each delegation shall recommend this branch of the subject to its own government for such action as that government may think necessary.

"7. That the International Opium Commission strongly urges all governments possessing concessions or settlements in China, which have not yet taken effective action toward the closing of opium divans in the said concessions and settlements, to take steps to that end, as soon as they may deem it possible, on the lines already adopted by several governments.

"8. That the International Opium Commission recommends strongly that each delegation move its government to enter into negotiations with the Chinese with a view to effective and prompt measures being taken in the various foreign concessions and settlements in China for the prohibition of the trade and manufacture of such anti-opium remedies as contain opium or its derivatives.

"9. That the International Opium Commission recommends that each delegation move its governments to apply its pharmacy laws to its subjects in the consular districts, concessions and settlements in China."—*North China Daily News.*

CHAPTER XII.

DISEASES PECULIAR TO CHINA.

Freaks.—China has long been known as **the world's largest storehouse of physical freaks,** and we are familiar with the expressions, Chinese giant, Chinese dwarf, and so on, and remember a good proportion of Chinese freaks in our home dime museums and circuses. This is probably owing to the simple fact of the four hundred millions to choose from. We have no grounds for supposing that there is any special reason for peculiar development along these lines. A contributing factor to the presence of Chinese "curios" in foreign shows is the well-known delight which the Chinese themselves take in their freaks, and the fact that they get them together in travelling exhibits for their own edification and amusement. As we write, there is at the present time in Shanghai such a troupe on exhibition for which a fairly large entrance fee is charged. The two chief attractions are a truly enormous hydrocephalus and a boy without legs. **McGinty,** the well-known dwarf who travelled with various circuses throughout the world, is now a man well on in life and permanently resident in Shanghai, his occupation being the amusement of guests at the Astor House, where he dresses as a porter and "chin-chins" the globe trotters. He comes to the Hospital occasionally for treatment, or to introduce a friend.

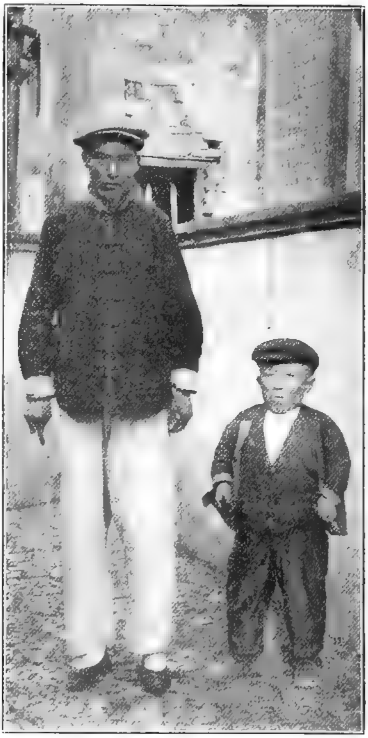

Fig. 126.—McGinty, a well known Chinese dwarf, at fifty years of age. (*By Jefferys.*)

We have been struck with the unusually large proportion of **limbs with accessory digits,** the commonest deformity being the accessory thumb, which occasionally grows at right angles to the carpo-metacarpal joint. A nurse in one of our hospitals has a double thumb, the twins being parallel and of equal size, fusing near the same joint, the distal joints being individual. Extra digits are usually considered lucky and no treatment is desired.

Accessory auricles we have frequently seen. These may or may not desire treatment by excision.

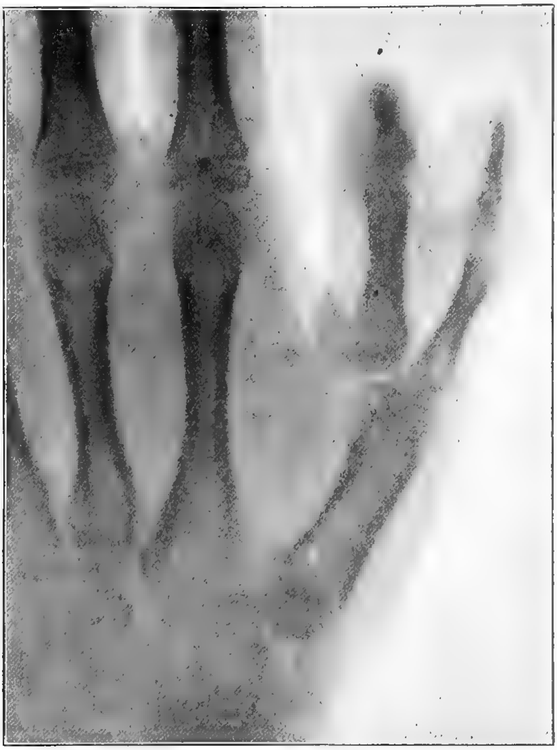

FIG. 127. Polydactylism. Double thumb, about equal in size and moving as one. (*By Jefferys.*)

Hypertrophy, or excessive development of **the male breasts** is occasionally found. A ricksha coolie presented a right breast of the size and shape of that of a grown girl, the left being a normal male organ.

Harelip and cleft palate in every degree are excessively common, and though not always demanding treatment are usually glad of it, and most appreciative.

Logan (Changteh) has reported an interesting case of local **gigantism** (or giantism):

"Chinese man twenty-eight years of age. The thumb, ring, and fifth fingers are normal in size, while the first finger is slightly and the middle finger enormously enlarged; the finger-nail being almost as large as a twenty-cent piece. So far as I could observe the man was normal in every other respect. He and his mother both say that the enlargement was congenital.

For further information, "Congenital Deformities" a paper read by J. P. Maxwell, at the Hankow conference of 1910, should be consulted, also Cole's list of deformities, presented at the same time.

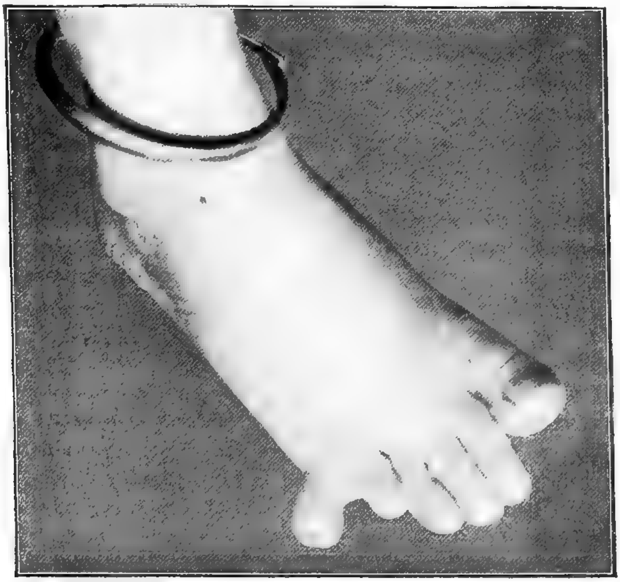

FIG. 128.—Polydactylism. Double fifth toe. These had separate bursæ, and moved apart. A shoe could not be worn and amputation of the external digit was performed. (*By Jefferys.*)

Artificial Deformities.—Besides the vast army of natural freaks, China turns out a good many artificial ones in various ways. There are the Buddhist priests who store up merit by burning off one or more of their fingers, or by cutting and piercing various skin flaps, and all of whom burn their scalps with the nine round scars. Then there are the children whom they buy and shut up in jars so that they can neither alter their position nor grow properly, and being wretchedly fed and never washed, degenerate into human vegetables, which, after awhile, are toted around as "living Buddhas" till they get back some life and semblance of humanity, when they are put back in the jars.

The myriads of **beggars** also go in for **voluntary deformation**—crawling on their knees till they cannot assume an upright posture; welcoming and encouraging an ulcer or a skin disease or a blind eye until the utmost possible deformity and condition of filth are attained. When no better result can be accomplished, something may always be done with paint and plasters, and a very good imitation of the real thing produced. The beggars as a class will rarely submit to treatment, since their livelihood so largely depends on the amount of sympathy they can excite; even an elephantoid scrotum being used for financial profit (Maxwell, Formosa); and since they do not greatly mind their troubles, but rather rejoice in them, it hardly seems necessary for us to wear out our hearts in sympathy. But whatever may be allowed to adults, the children and babies should be forcibly taken away from such creatures by the local authorities and treatment provided for them.

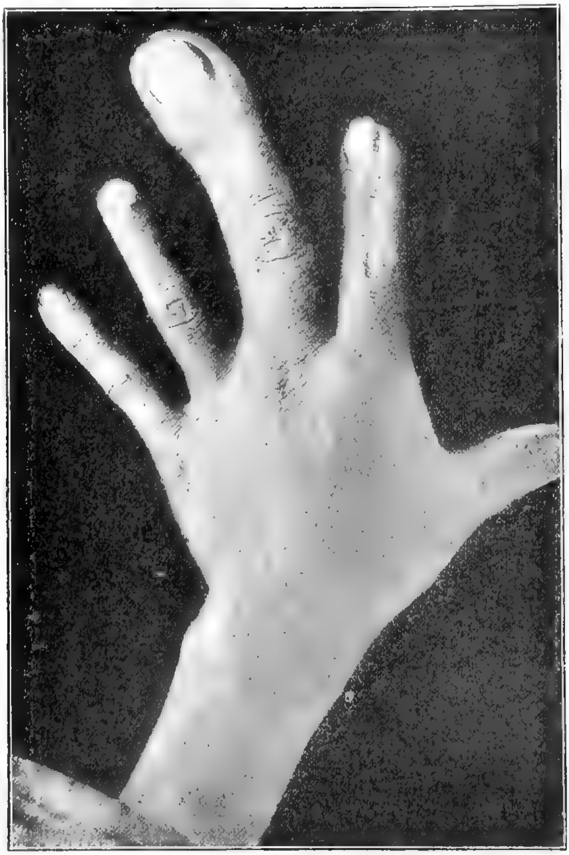

FIG. 127. Double congenital macrodactylia. (*By O. T. Logan, Changteh.*)

Brigands and those who seek revenge on their fellow human beings not infrequently resort to the practice of **maiming their victims.** A very common form of this is for the highway robber to draw a knife across the two eyes and the bridge of the nose of his victim and so completely dividing the organs that restoration of sight is an impossibility. Another is to take a long bamboo tube and to press on the eyeballs until they pop out and hang sightless between the lids. This gentle provision is to avoid the possible danger of identification. Cutting out the tongue, ear-slitting and the cutting off of ears is a form of revenge rather than a brigand's practice, and of course the cutting of the cue is a deadly insult—though a blessing in disguise.

"Among other cases of interest, the following may be mentioned: a teacher, who had both the great tendons of the leg (*Tendo Achillis*) cut by robbers, and who left the hospital, able to walk; a man who came in for the amputation of a giant great toe measuring 11 cm."—*Kühne, Tungkun.*

With regard to the ears, the wearing of heavy earrings or the catching them in draperies (or their snatching by street thieves) leads to their tearing through, leaving the lobe of the ear split. This Chinese women regard as a very ugly form of deformity. The condition is easily remedied by freshening the edges, treating the lips of the wound exactly as harelip is treated, and then placing the sutures on the inside, and not piercing the skin externally at all avoids stitch scars on the exposed surface. The operation is done by a V-shaped incision, the stitches placed as in harelip. This is merely a cosmetic procedure, but gives much pleasure and may be used as a source of income in hospital work. In Formosa some of the aboriginal tribes introduce large foreign bodies (pebbles?) into the lobe of the ear and so make the lobe of enormous size. It is merely for cosmetic reasons. The Tibetans do much the same thing with such heavy earrings that the weight has to be shared by a string passed over the top of the head.

Eunuchs are, of course, artificially manufactured for Palace service, and have figured conspicuously in Chinese political life, usually to the disadvantage of China. Recent reports from Peking indicate that they are to be replaced by ladies-in-waiting, which seems much more appropiate to New China.

"From the second year of Hsuan Tung the practice of receiving apprentices among eunuchs will be stopped, after which old and infirm eunuchs will be pensioned and sent back to their native homes. The sixth year of Hsuan Tung will see the last of them."—*North China Daily News, Shanghai.*

"The persistent drought caused loss of lives, and this in a curious way: the water-buffaloes, enraged at not being able to bathe in the ponds, as they are used to do after their day's work, made their guardians responsible for the want of water, goring them in a frightful manner. Once we had four such cases in one ward, later came one which proved fatal."—*Olpp, Tungkun.*

"Three men have come during the last two years with injuries from the large glass mouth-pieces of their pipes. Two were carters, and while sitting on their carts with pipe in mouth they drove so close to a wall that the end of the pipe, coming in contact with the wall, the mouth-piece was driven into the back of their mouths. The pipe was pulled out, leaving the glass mouth-piece, about two inches long and over one-half inch in diameter, in the wound.

"In one case it was imbedded in the cheek, and, although entirely out of sight, was removed without much difficulty.

"The other was forced through the back of the mouth, and lay at the base of the skull inside and back of the ramus of the lower jaw.

"This was also safely removed, but not until after repeated efforts on the part of the surgeon and much suffering on the part of the patient.

"The third case was that of a young man who, while intoxicated, fell with his pipe in his mouth. The pipe was forced down his throat, and the mouth-piece became detached and lodged in the right side of the neck just at the upper border of the clavicle. This was removed by cutting down on to it externally." —C. *F. Johnson, Ichowfu.*

GO KAN JIU MU.

"We have often met with women who have cut out pieces of their flesh in order that a stew could be made with which to restore to health a sick husband; or men who have cut off arms, fingers, and toes in order to free themselves from some charge or get even with an enemy. These are all the teachings of superstition. But up to this year I had never met with a case where a person had attempted to excise her own liver that she might obtain a piece with which to make broth to restore a sick mother or mother-in-law. In both cases the idea originated from their reading some theatrical book, which book I have thus far been unable to obtain. This book claimed that liver obtained from a living person had special curative properties and that such an act was meritorious on the part of the person who had the nerve to do the operation on himself. I heard at least one wealthy gentleman (Chinese) commend the act and he even went so far as to say that he was going to give the woman some money.

"The first case occurred in the practice of Dr. Assmy, of the German Hospital. The doctor was called the next day after she had opened her abdomen. He found the abdomen sealed with burnt paper, which no doubt saved her life. Her attempt was successful, as she had made a cut high enough and over the left lobe of the liver, so that as soon as the abdomen was opened the liver bulged up into the wound and she was able to excise it without any of the abdominal contents protruding. As proof they showed the doctor the piece of liver, and there could be no doubt that it was actually accomplished. She made an uneventful recovery and was lauded to the skies by the Chinese for her filial act. The doctor said that the patient's mother also recovered after taking a few doses of quinine.

"The second case occurred in my own practice about three months after the above. The patient was a young married woman, unusually strong and healthy, living in a city about sixty English miles from Chungking. Her mother-in-law was sick, and in order to show her love she took a big vegetable knife and with one cut opened her abdomen, but not with the success of the first patient. The position of the cut was all right, that is, about 1 inch to the right of the median line, but the penetration into the abdomen was too low to expose the liver. The consequence was that she struck intestine in place of liver, with the result that the intestine protruded. They became frightened, as the Chinese hold that the intestines are 'mo po ta,' and decided to bring her to Chungking for treatment. They called a Chinese doctor, who put one or two stitches in the wound with a coarse cotton thread. They had presence of mind enough to tie a cotton cloth around the abdomen, which prevented any great amount of the intestines from coming out.

"As the colon presented the worst appearance and we did not think it advisable to resect both large and small bowel, we decided to clean the small bowel and resect the colon, which was done.

"She lived to reach home and was reported to have eaten food. She lived forty-eight hours after operation. How long she might have lived if she had not been taken back it is difficult to say. But no doubt she would have lived much longer, and it is not at all improbable that she would have recovered. The merit she obtained cost her her life, but no doubt her city pays honor to her memory. It would be interesting to hear if any other physicians have met with similar cases in China and to know if it is of frequent occurrence."—*McCartney, Chungking.*

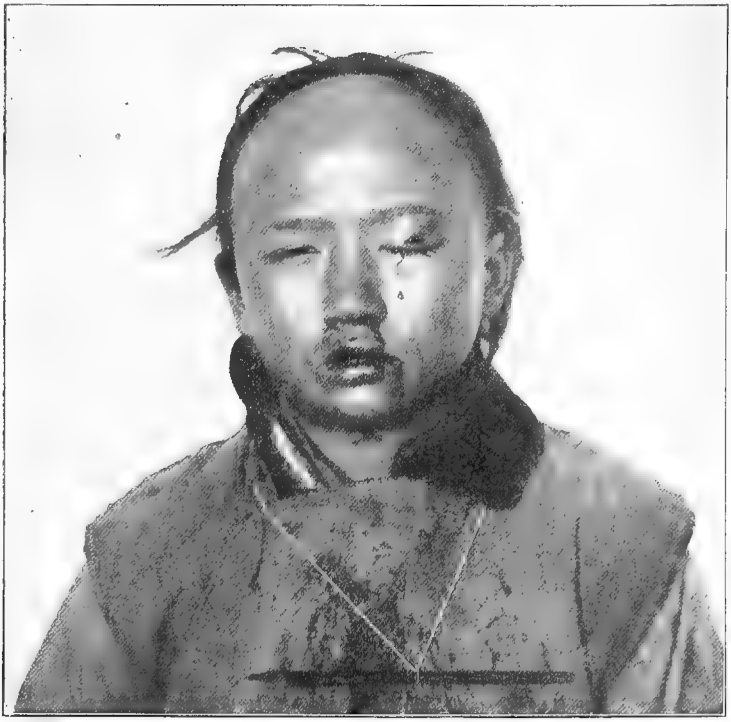

FIG. 130. A curious accident. The stick hung from the boy's neck, passed through both eyelids, the antrum, the palate, the tonsil, and protruded under the angle of the jaw on the opposite side. It was completely buried except for the point. The eye was not injured and no serious harm resulted. (*By Jefferys.*)

Footbinding in China is on the decline, owing partly to the influence of the Anti-footbinding Society, largely to the influence of foreign contact and the example of progressive families, which are to a great extent abandoning the practice. And it is likely that the near future will condemn it altogether. But for the present bound feet are ubiquitous, and will be found as long as the present generation survives, since, when feet are once throughly deformed by compression their weakness requires the support of the bandages for all future time. And of course the deformity is, at least largely, irremediable.

> "The fashion of foot binding it said to have originated in the Imperial harem during the T'ang dynasty, some 1,400 years after the time of Confucius. Emperors of the present (*Manchu*) dynasty have issued proclamations against the practice frequently, but without effect. It was reserved for an English lady (*Mrs. Archibald Little*) to stimulate the native gentry, who are themselves the chief offenders, to bring about a reform. The movement is becoming effectual, and foot-binding is now being gradually abandoned by Chinese women." *Smyth, Ningpo.*

As a custom, it is more inconvenient than dangerous, and its evils arise rather from the limitations to bodily exercise which it imposes than from the local diseases which it produces, and which have been greatly exaggerated.

The practice consists in the application of a short, heavy bandage, neatly and tightly, to the feet of growing girls, beginning sometimes as soon as the third or fourth year in the better-to do families, where the utmost result is sought, later, in the lower classes, where a certain degree of household labour must be allowed for.

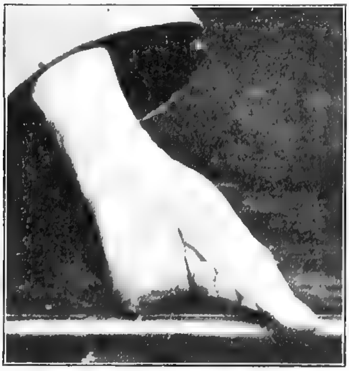

FIG. 131.—Bound left foot. (*By Messrs. Denniston and Sullivan, Shanghai.*) Note the callous spot over the first metatarso phalangeal joint, also the creases from the pressure of the bandage

In the process of binding the great toe is merely compressed, but allowed its extension, or slightly elevated. The other four toes, however, are bent under the foot, where they are eventually walked on and their compression and atrophy enhanced thereby to such an extent that they often resemble little more than flabby appendages pressed deeply into the sole of the foot. The heads of the metatarsals are tightly drawn down in apposition to the tuberosity of the os calcis, so that the utmost arching of the instep is attained and the os calcis brought into a vertical position in the direct line of extension with the bones of the lower leg. The metatarsals often attain a position almost parallel to the same line. The tarsal bones are bent over and crowded almost out of existence, in extreme cases the patient walking on the tip of the os calcis, the distal end of the first metatarsal and the plantar surface of the great toe and the dorsal surface of the others.

When a foot is thus shortened and in addition, owing to constant pressure and insufficient circulation, fails in great measure of develop-

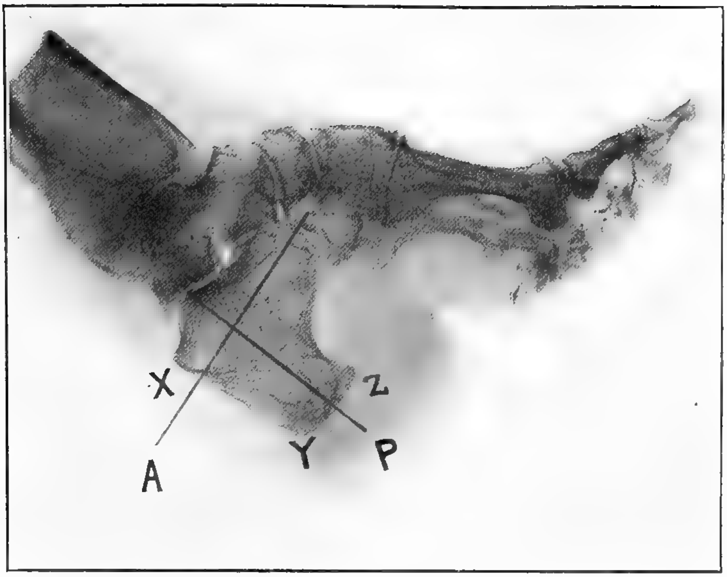

FIG. 132.—X-ray of Chinese bound foot from the side. (*By permission of the Annals of Tropical Medicine and Parasitology, Univ. of the Liverpool. Photo by courtesy of C. Thurston Holland, Liverpool.*)

A, Axis of anterior half of os calcis; *P*, axis of posterior half of os calcis.

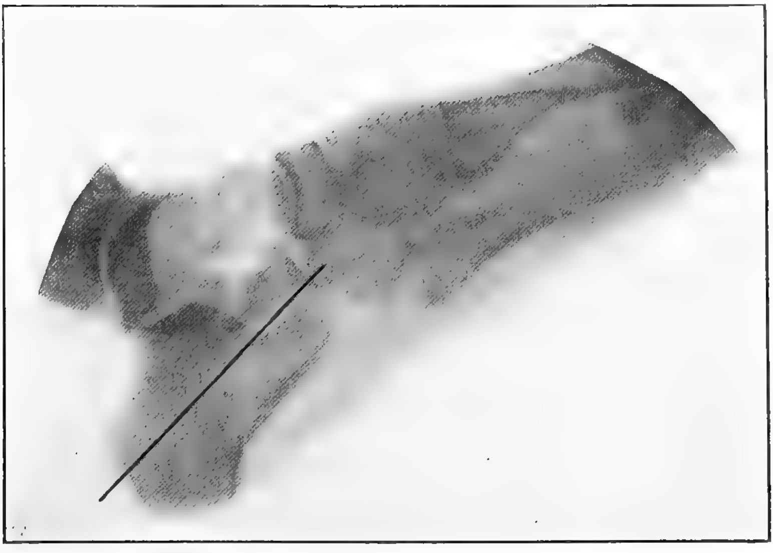

FIG. 133.—X-ray of normal foot from the side. (*By permission of the Annals of Tropical Medicine and Parasitology, Univ. of Liverpool. Photo by courtesy of G. Thurston Holland, Liverpool.*)

ment, the plantar length thereof may be as short as 3 inches, or a little less; though the average bound foot is much larger than this. In walking the weight is borne upon the extremities of the arch and progression is slow and halting, and equilibration uncertain and the walker soon tires. The appearance is of one walking on short stilts, or two peg legs, the muscular development of the legs being greatly reduced and the legs often appearing as mere sticks.

During the initial stages footbinding is intensely painful, especially if delayed and the child of five or six years of age when it is begun. At such times as the bandages are changed, the screams of the children are often pitiable. Later on the support is necessary and grateful, and not easily dispensed with. A foot which is once deformed will never recover its normal growth, but if unbound in early girlhood will attain some approach to the normal and a certain amount of development may be hoped for. As a cause of disease it may be readily understood that a poorly nourished, anæmic extremity with deformed bones and abnormal strains is a favourable site for tubercular deposits, and tubercular bone disease in bound feet is excessively common. This is, however, the chief pathologic evil of the practice. In poorly nourished children and in all cases of injury there is a very positive tendency to gangrene and death of the part, and amputation is frequently called for. This condition is particularly common in slave children destined for immoral purposes, the owners aiming at the utmost compression of the feet and at the same time neglecting the physical condition of the child.

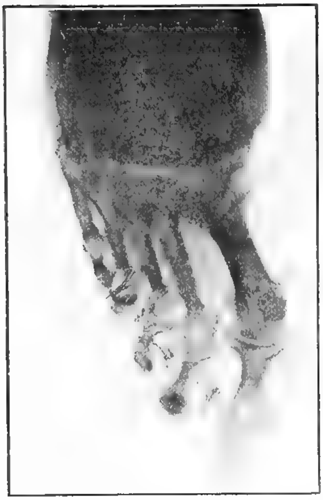

FIG. 131. X ray of Chinese bound foot from above. (*By permission of the Annals of Tropical Medicine and Parasitology, Liverpool. Photo by courtesy of C. Thurston Holland, Liverpool.*)

> "Footbinding brings with it innumerable evils, especially in young girls. In the wards we have had cases of necrosis of phalanges, synovitis of knee-joint, total lameness, anæmia, amenorrhœa, etc., all due to this baneful habit."—*Wolfendale, Chungking*

Eczema of bound feet is exceedingly common, due probably to lack of cleanliness and insufficient frequency of exposure to the air, with consequent maceration of the epithelium. The condition is distressing, since compression is intolerable and the patient cannot walk without it.

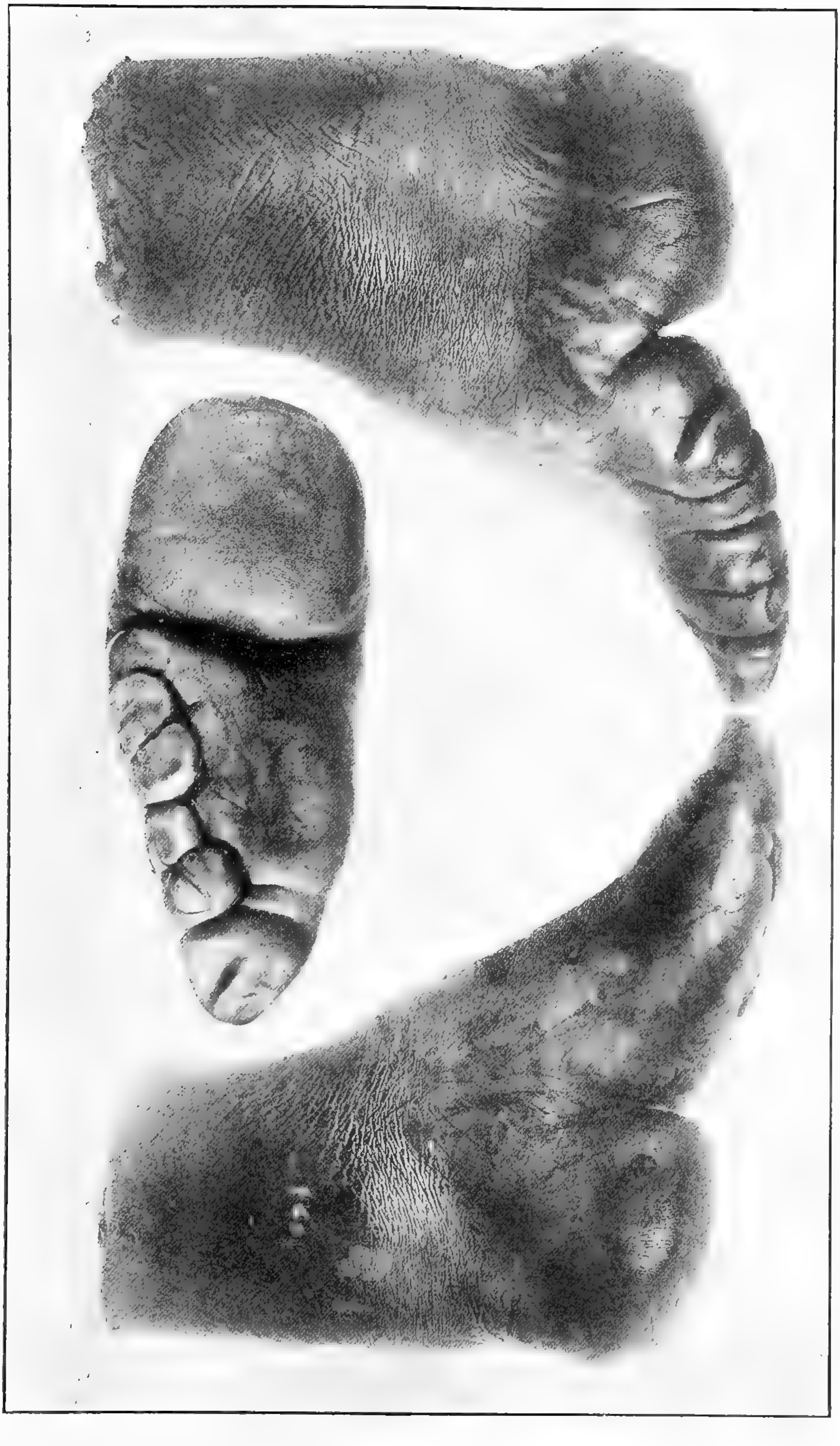

Fig. 135.—Chinese bound foot from both sides and from below. (*By permission of the Annals of Tropical Medicine and Parasitology, Liverpool. Photos by courtesy of Frank Jeans, Liverpool.*)

In milder degrees it is responsive to measures of cleanliness and hygiene, the use of dusting powders, and other appropriate treatment.

NOTE. For an excellent description of the condition of the bones, see *Annals of Tropical Medicine and Parasitology*, Vol. II, 4, p. 299, by Frank Jeans.

For further account see *Williams' Middle Kingdom*, Vol. II, pp. 38 41.

Scars. The scars which we find on the bodies of our patients need some explanation. We have referred already to the deliberate scarring in the case of Buddhist priests. The use of **hot needles** (cold leave no scar, unless infection takes place) usually leaves a small, round, at first red, later white, scar with a slight depression and smooth surface. Occasionally the burns are fairly extensive and the scar may be the size of a silver five- or ten-cent piece. Then there are the scars from burning with hot copper cash. We do not mean the simple redness from scraping with cold cash. These **cash scars** may be anywhere, but are usually on the neck, chest and back.

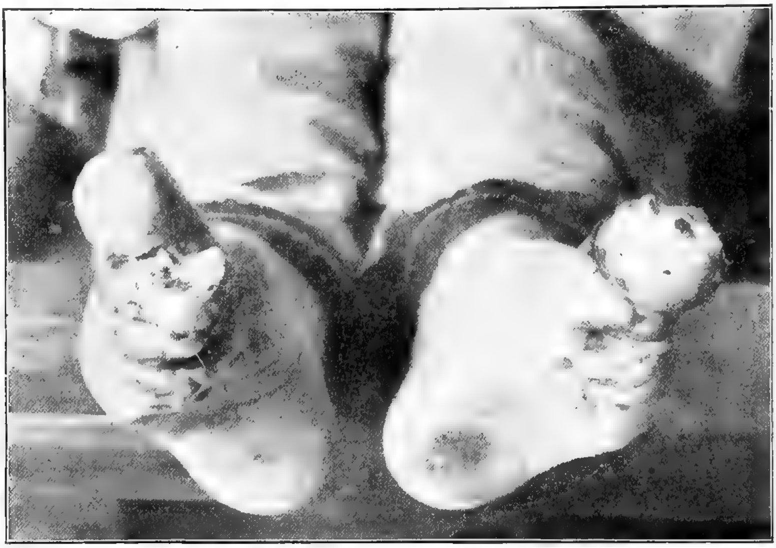

FIG. 136.—Gangrene of large toes from footbinding. (*By Cousland, Swatow.*)

"We saw on several of our neuralgic patients the round scars caused by the moxa slowly burning pastiles made from the dried leaves of *Moxa Artemisia*—a favourite native remedy. This rude method of counter-irritation is used even for young children, as we discovered one day last year when a baby, who was only a week old, was brought to the dispensary suffering from a septic suppurating wound of the upper part of the abdomen where the moxa had been applied to cure an attack of colic. The ulcer was washed and dressed with antiseptics, an anodyne draught relieved the child's pain and she was admitted to the woman's hospital; but we failed to save her life." *Smyth, Ningpo.*

Surgical scars are rare indeed, but occasionally a fresh wound will be met which will have the history of native surgical interference.

What is getting to be a fairly common form of scarring in the neighbourhood of Shanghai is that resulting from the constant use of the **morphine needle,**[1] without proper disinfection (without any disinfection). The scars are those resulting from a rather deep furuncle which follows many of the very frequent injections. They are found on the shoulders and other aspects of the arm; on the back and other aspects of the thigh. Sometimes a larger surface infection takes place, or a deeper one, and considerable tissue is lost through sloughing.

The misuse of strong foreign drugs is occasionally met with. Maxwell (Formosa) reports two cases of pure carbolic acid applied to the eyes.

Toxic Gangrene from Stramonium Leaves. See Chapter XVII.

Poisoning by Datura Alba.—*Hongkong Health Reports*, 1905.

Special Diseases of Occupations.

It is certain that this series is far from conclusive. Time alone and an intimate knowledge of the race will develop the subject. We would place first on the list what is known in this district (Shanghai) as **Ningpo varnish poisoning,** or lacquer poisoning. There is a special varnish made in the neighbourhood of Ningpo (Checkiang province), containing a lacquer juice from trees growing there. The name of the tree is Rhus vernicifera, and it grows also in Szechuan, Fukien, Yunnan and Hunan. The varnish, except in exceedingly damp weather, takes a long time to dry, and so long as it is in any sense moist or sticky it is liable to produce the condition which in every essential respect is identical with the poisoning of Rhus toxicodendron (ivy poisoning). We have no doubt that the lacquer contains toxicodendric acid—at least, it has been so stated. Susceptibility to it is very variable, but few escape it if thoroughly exposed. Actual contact is, in our belief, generally necessary, though it is certainly popularly held that air which has passed over the freshly varnished surface can produce the disease. The symptoms in milder form are met with from contact with the leaves and branches of the trees. The native method of applying the varnish is by hand, using something in the nature of cotton waste and smearing it with the same. A certain positive immunity is developed in most of the varnishers in the course of time; nearly all are poisoned on first going into the business, and some persistently so. A description of the dermatitis is unnecessary as it is identical in all respects with ivy poisoning.

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[1] See Chapter XI.

Treatment. —Scheube says that

> "In China, according to Du Halde, the workers in lacquer prophylactically rub their faces and hands with **rapeseed oil** in which pork has been boiled; after work they rub in a decoction of chestnut and pine-bark, saltpetre and a kind of amaranth made with water. During work they cover the head with a linen mask and the upper part of the body with a leathern apron."—*Scheube, p.* 332.

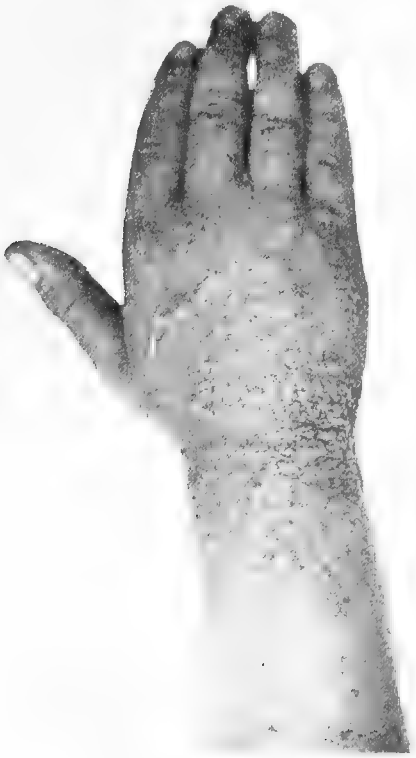

FIG. 137. Ivy-poisoning. (*Schamberg's Diseases of the Skin.*)

We confess that we have not seen this practice in the Shanghai district, except that native rapeseed oil is snuffed into the nostrils and rubbed on the exposed parts—chiefly as a prophylactic—though the vast majority of workers seem to take no precautions whatever. A. W. Baird, in the *Medical Record* for August, 1909, gives a rational synopsis of treatment:

> "No scratching, no ointments in the acute stage; no bandages, for these tend to spread the poison to adjacent surfaces; if any protector is necessary, it should be a

loosely applied dressing of absorbent cotton kept moist at all times and changed at intervals; frequent and copious washings with luke-warm water and unirritating soap; in handling the inflamed surface it is best to wear rubber gloves; after the parts are washed, a 2 to 4 per cent. warm solution of permanganate of potassium should be applied. This completely neutralises any poison with which it comes in contact; the strength of the solution and the frequency of application are matters of judgment with the physician; after the acute stage is passed, ointments are permissible."

℞.	Zinci Oxidi,		ʒiv
	Acid Carbolic,		ʒi
	Liquor Calcis,	q. s. ad	Oi

Sig.—Shake and wrap over affected surface frequently day and night.

On "Severe Ivy Poisoning," we quote the following from an excellent paper by Ward, New York, in the *N. Y. Med. Journal* for December 28, 1908:

"Individual susceptibility or immunity plays the decisive rôle in this condition more strikingly than in almost any other. As a rule, dark complexioned individuals are slightly less susceptible than blondes, although this is not to be relied upon.

* * * * * * * * *

"I shall describe only the acutely susceptible.

"Of these some are so sensitive that, being near where poison ivy is being cut, or burned, or having the wind blow over the vines onto the individual, will excite a severe attack. This is, however, rare, as an actual contact *with the vine is usually necessary.

* * * * * * * *

"The pathological process is a true dermatitis, the entire derma being the seat of a severe inflammation, and characterised by heat, swelling, and redness. There is at first an erythema, with some thickening of the skin, which appears a few hours after contact. Upon this base papules form, which rapidly fill with serum, while the skin below is becoming more œdematous. The vesicles may remain discrete, but usually become confluent, and rupturing, leave great, oozing, raw areas. By this time the skin has become so œdematous that affected arms or legs will be twice their normal size, and if the head and face are involved, the features may become as unrecognisable as in severe facial erysipelas, the œdema making the head and face round, and completely closing the eyes.

* * * * * * * * *

"The abortive treatment consists in the application of lactic acid, 2 per cent., in ethyl alcohol, 95 per cent., to the exposed parts just as soon as there is any tingling or reddening. It is evident that this cannot often be employed, but it is of great value in preventing the inflammation in secondary areas. This is used also by those who have suffered and wish to be armed against and able to begin successful treatment of a possible new inoculation.

* * * * * * * * *

"If the abortive treatment has failed, which it will unless inaugurated very early, or if the patient is not seen until vesicles begin to form, a lotion of the saturated solution of aluminum acetate applied to the affected area upon very loose gauze dressings and kept well wet with the solution, has, in my hands, been more efficacious and comforting to the patient than those mentioned below, which are commonly used. New dressings have to be applied at least three time daily, on account of the excessive weeping. Under no circumstances do I substitute ointments at night during this stage. The wet dressings are continued day and night until weeping stops. Solutions of phenol, 2 to 4 per cent., sodium bicarbonate, sodium sulphite, lead acetate, lead and opium wash, or black wash may be used if aluminum acetate is not at hand. When the weeping subsides the wet dressings are discontinued and an ointment of ichthyol, 10 per cent., in petrolatum, is applied. I have found this the best ointment to use.

* * * * * * * * *

"Under no circumstances are the surfaces rubbed or the vesicles evacuated. I have seen slight rubbing during dressings set up violent burning and intolerable itching requiring a hypodermic injection of morphine. When sleep is disturbed because of peripheral irritation I give codeine sulphate, gr. ss, at bed time, and repeat during the night if necessary.

"The diet should consist of milk and vichy or some other carbonated water, equal parts, alternated with simple, salt-seasoned broths, and a few light vegetables. For two weeks after the local manifestations have disappeared I keep the patient on a strictly vegetable diet.

Chronic Mercury Poisoning.

Among the industrial diseases of China we have failed to discover any reference to this condition, and we think that this is sufficient excuse for bringing these cases to the notice of our fellow workers among the Chinese.

On February 14, 1910, three patients were admitted to the Tainan Hospital suffering from the same complaint in varying degrees. The symptoms for which they sought relief was that of marked tremors of the limbs. All three came from the same town, and worked in the same silversmith's shop. Further, they stated that two other people in the same town, also silver workers, were suffering from the same disease.

Case No. 1.—The youngest, a lad of fifteen, had worked in silver for less than one year. He had been ill for two months, and suffered from slight tremors, the exact nature of which will be described later.

Case No. 2. A young man of twenty-three had worked for three years and had been ill for one month. The tremors in his case were more marked.

Case No. 3.—Father of the first was thirty-nine years of age, had worked twelve years as a silversmith, and then had to give up his employment seven years ago owing to this illness. The tremors in his case were very severe, walking was difficult, and the voice was affected.

It was evident at once that only some form of industrial poisoning could account for this condition, but we searched our medical literature for some time before we came on the explanation. Undoubtedly the condition is one of chronic poisoning from the vapour of metallic mercury used in gilding.

From Clifford Allbutt's System of Medicine, we quote the following:

> "Until lately, water-gilders made use of mercury for depositing gold on metallic surfaces, and in mirror-silvering it was also employed. Water-gilding in this country has been largely replaced of late by electro-plating. The silverers used to suffer considerably from mercurialism, but the silvering of mirrors is now practically harmless. . . . One of the most frequent consequences of industrial mercurialism is tremor of the limbs, and this, usually the consequence of breathing mercurial vapour, may be the only manifestation of any effect upon the system."

The symptoms as shown in the patients under our care corresponded exactly with the text-book description of the disease.

Tremors affect especially the arms, only these were affected in our Case No. 1.

In some of the very severe cases, the tremors were so severe as to resemble violent chorea. This was so in Case No. 3. The patient prefers to lie on the floor. Case No. 3 tumbled out of his bed. He could neither feed nor clothe himself. The powers of speaking, chewing, and walking were affected. Stomatitis was present in all three cases, but not very severe. Tremors were more marked during exertion, and disappeared during sleep. Indeed, in Case No. 1 they were only marked on muscular exertion. There was distinct loss of muscular power in the arms in all three cases; we have not seen this mentioned in the text-books.

In case No. 3, the memory was affected and the mental balance easily upset. This was very clearly shown by the subsequent history while in Hospital. No. 2 left hospital before No. 3 and by mistake took the name-seal belonging to No. 3, instead of his own. No. 3 got the quite mistaken idea that No. 2 had taken the seal to use in obtaining his (No. 3's) property. This delusion took such effect that the man became temporarily insane, and we had to send him home with an attendant. On reaching home, and finding that the seals had only been exchanged by mistake, he regained his mental balance.

Treatment.—Potassium iodide is said to favour the elimination of the poison. It appeared of no use in any of these three cases. For the local condition of the gums, painting with an alcoholic solution of tannic acid proved very effective. Bromide relieved case No. 3 very considerably. Cases Nos. 1 and 2 improved very markedly under hypodermic injections of Liq. Strychnine Hyd. mii. twice a day.

On further inquiry, we find that the disease, though not its cause, is well known among silversmiths in this island. For prophylaxis, it is stated that free ventilation of the workshops and frequent washing of the mouth greatly lessen the incidence of the disease.—*J. L. M.*

"**Atriplicism,** so-called by Matignon, is a disease that frequently occurs in North China (Peking), and which is manifested by localised œdemas, disturbances of sensibility and vasomotor and trophic disorders. According to Matignon, this complaint is caused by poisoning with atriplex." *Scheube, p. 228.*

The makers of a certain form of anti mosquito powder are reported as developing occasional undefined toxic symptoms, but the details are not available.

Carry-coolie's Shoulder.—We shall refer under tumours (Chapter XVIII) to the lipoma or lipo-fibroma developed on the shoulders of the coolies who carry heavy burdens slung on bamboo poles. This is a disease of occupation of a very typical character.

Cotton-beater's Cough.—Cotton beating is a common practice all over China, a familiar sight being the small, narrow shop with a large, low, square table on which piles of cotton wool are twanged, day in and day out, on the funny fiddle-bows of the workers. One has but to stand by for a moment to notice the immense number of flying cotton fibres and dust particles. This is bad enough in the case of the beating of new cotton; but when it is realized that the contents of bed quilts and winter clothes, which may have been used an indefinite time or number of times without cleaning, are also brought to them for teasing out, we may get an idea of the flora and fauna which this dust may contain. Occasionally but to look at the cotton is enough to turn one's stomach. There is undoubtedly lung disease associated with this occupation, with probably an accompanying anæmia. The appearance of the workers is peculiar. We have heard it claimed that they can be recognised by their appearance. They are pale and sallow-looking, with poorly developed muscles and flat chests. We should expect to find more or less eye trouble among them. Whether the lung disease is only tubercular or of the nature of a cotton anthracosis, we have no knowledge. The matter warrants careful investigation.

There is a Chinese complimentary custom of presenting to a friend of fifty years of age a particular picture of someone who is supposed to have been noted for filial piety. The peculiarity of the picture represents an old man with a very **highly developed frontal eminence,** which is supposed to be the result of his practice of devotedly knocking his head on the ground in adoration of parents and ancestors. The picture looks a good deal like a case of frontal hydrocephalus. We doubt the connection of this with filial piety, though we have no doubt whatever of the gentleman's virtues. Frontal hydrocephalus is common.

Dudgeon writes in his paper, "The Diseases of China," that "Apoplexy among the aged officials in Peking, properly disposed to it by their obesity and their having to perform the nine obeisances before the emperor so frequently, is not very uncommon."

Avulsion of the Scalp. Whether avulsion of the scalp may legitimately be considered a disease of occupation we do not feel quite certain. It is an accident of occupation, without doubt. It is confined to the Chinese working with machinery, and among such is excessively common. The explanation is simple. Both young women and all men wear their hair plaited down their backs, the men adding a tassel to make the cue extra long. They are green in the use of machinery and careless as well as unappreciative of danger, and in spite of every regulation commanding them to coil the cue on the top of the head, they disobey the rule, and pay the penalty. It is not only the workers, though usually such, but visitors to factories and clerks and so forth passing through them who come to this grief. There is every grade of severity in the accident, from those in which small portions of the scalp are partially torn away to others in which the whole scalp from the eyebrows to the nape of the neck, and, usually (excluding the ears) both lateral aspects of the scalp, is torn completely off. Hæmorrhage is severe and inevitably the wounded surface is wrapped in some dirty thing, which increases the danger and the difficulty of first aid. The prognosis is, in our experience, universally good for life, though the process of recovery is exceedingly slow. The available parts should be stitched together and long silk retention stitches passed in various directions across the bare surface, to prevent the sagging of the edges due to lack of support. Nothing but sterile gauze should be used as a dressing, though the part should be thoroughly cleansed and douched at least once daily. It will be found that before very long healthy granulations will outline the sutures of the skull and the venous foramina, and spread from these in every direction, as well as from the edges toward the centre. In the course of a month or so the skull will be covered and the exposed surface closed in to about a third of its original extent. The remaining process of growth and healing is very slow, but may be vastly hastened by one or more skin-graftings. The final result is often surprisingly good, giving the appearance of senile baldness, with a fringe around the neck. The nourishment of the patient must be kept up throughout and every effort made to maintain general physical excellence.

Demoniacal Possession.—The Chinese are strong believers in demon possession, and an interesting study by the Rev. J. L. Nevius, D.D., under the title "Demons and Demon Possession in China," has attempted to demonstrate the frequent reality of its occurrence among the Chinese. Most of the cases quoted are founded on insufficient evidence. Many were plainly epilepsy, melancholia, and other well-known nervous conditions. With Coltman we echo the sentiment as to demoniacal possession —we are no believers in it.

Stricture of the Œsophagus.—In some parts of China this is much commoner than in western lands and warrants a few lines of comment here. We are unable to give the exact figures in Formosa, but we have met cases of this nature with very considerable frequency. Much more striking still are some remarks by Manson in the *Customs Medical Reports*[1] where he says that in Amoy he had seen sixteen cases of stricture of the œsophagus in one year out of 3,055 patients. He believes them certainly to have been organic in nature and probably not malignant.

> "I should very much like to know whether stricture of the œsophagus (Ken shih ping) is as common in other parts of China as it is here in N. E. Szechuan. It occurs, as a rule, in men past middle age. One usually sees the cases only when too far advanced to admit a bougie, but they seem clearly *not* due to carcinoma or to pressure of aneurism or enlarged glands. Signs of former syphilis are, as a rule, wanting, and iodides are of no use."—*C. C. Elliott.*
>
> "Stricture of the œsophagus is far from uncommon. Some say it is due to the irritative effects of the wine drunk hot, though some of the patients do not drink wine. Others say it is due to syphilis. This I think more likely, as nearly all my cases have improved under dilatation and iodide of potassium, administered internally; some with mercury and iodide alone without dilatation. The native faculty consider this a fatal disease and call it the Starvation Disease."—*Coltman, Tsinan.*

Of the number we have seen ourselves, a few, but only a small minority, have probably been malignant as indicated by rapid onset, cachectic appearance of the patients, enlargement of supraclavicular glands and easily bleeding on examination. On the other hand, the majority have been very chronic, without any glandular infection and not liable to bleeding as a result of careful dilatation. We believe ourselves that these strictures are syphilitic in nature though comparatively little can be expected from anti-syphilitic treatment as the strictures are the result of the fibrous contraction of healed syphilitic lesions rather than from active lesions of a syphilitic nature. The stricture is usually situated about opposite the bufurcation of the bronchi.

Treatment.—The cases practically resolve themselves into a small number in which the stricture is very tight and unyielding and in which dilatation seems to be of little use. The only possible treatment for such is gastrostomy; and for the present, with the little nursing possible in the ordinary Chinese home, we think this operation is, as a rule, unjustifiable. Happily the majority of cases come to us before matters are so far advanced or the scar tissue so hard. Such cases may improve enormously under regular daily dilatation. For this we recommend the whalebone bougie with metal ends of different sizes. Commencing with a small size, it is often possible to pass before long a medium- or large-sized bougie. Gum elastic bougies are unsatisfactory in a hot climate as they crack and lose their smooth surface. It is possible that injection of fibrolysin might allow still greater or more rapid dilatation, but we have no personal experience of the use of this drug. Antisyphilitic treatment should be tried, but where unsuccessful should not be persisted in for too long. (*Stricture of Œsophagus, by J. L. M.*)

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[1] *Customs Medical Reports*, 1876, Vol. II, p. 37.

Ear Diseases from Barbers' Instruments.—See Chapter XXII.

MACLEAN-MAXWELL DISEASE.

Chronic Enlargement of the Os Calcis.—Under this heading Maxwell, of Tainan, Formosa, reports with illustrative cases a condition which he describes as follows:

In 1905,[1] we described a condition of endemic enlargement of the os calcis, somewhat similar to a condition formerly described by Maclean as present in West Africa; the editor of the *Journal of Tropical Medicine* has called this condition by the above not very euphonious name.

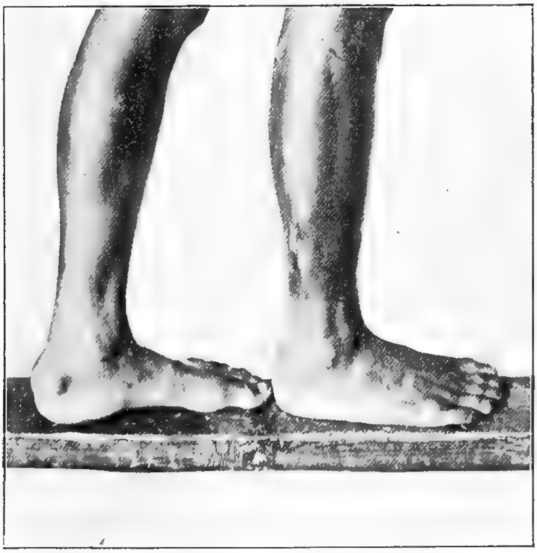

FIG. 138.—MacLean-Maxwell Disease. Chronic enlargement of the os calcis. (*By Maxwell.*)

The disease as seen in Formosa consists in a chronic enlargement of the posterior third of the os calcis with tenderness to pressure and pain often of a quite disabling nature on walking. The enlargement of the heel is well shown in the accompanying photograph. The disease has only been observed in young men between twenty and thirty years of age and consists not merely in a periostitis, but in an actual enlargement with rarification of the bone, the outer shell of compact bone being very thin and the spaces in the cancellous tissue enlarged and showing fatty changes. Several cases have been observed where venereal disease could be excluded and we have no knowledge of the cause of the condition. We rather doubt the wisdom, however, of referring to the disease as a pathological entity.

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[1] *Journal of Tropical Medicine*, 1905, p. 82.

The treatment is simple and satisfactory. An incision is made over the outer side of the os calcis dividing the periosteum. The periosteum is raised with an elevator and a small trephine driven through the bone from side to side. The pain and tenderness is at once relieved and convalescence is very speedy.—*J. L. M.*

Cirrhosis of the Liver.—Some may wonder why the subject of cirrhosis of the liver is introduced into this volume and would be inclined to exclude it from a book devoted to the diseases of China. While it is very difficult to deal dogmatically with a question of this kind, it is certain that, in parts of South China and Formosa, cirrhosis of the liver is not a very rare disease. We have ourselves seen six cases of typical cirrhosis of the liver in patients operated on for the relief of ascites by omentopexy in whom alcoholism could be excluded. Further, we have treated many patients whose signs and symptoms led us to diagnose the same complaint. Alcohol as a cause can almost always be excluded in the Chinese, the ordinary forms of syphilis do not produce this kind of cirrhosis, nor does the prolonged use of opium. We have therefore to consider very carefully what the etiological factors can be. Is malaria the cause? Malaria has been and is held by some to be a cause of cirrhotic liver. For ourselves we cannot do better than quote a sentence from the Diseases of the Liver by Rolleston with which we must heartily concur: "Without denying the possibility that the necrotic changes in the liver cells induced by malaria may be succeeded by cirrhosis, this sequence of counts is evidently so rare that when cirrhosis occurs in a malarial subject the question must arise whether it is cirrhosis caused by malaria or merely cirrhosis in a malarial patient." We may add to this our own opinion that until the former is conclusively proved we shall abide by the latter opinion of the case.

If this be so, what are the causes of cirrhosis of the liver among the Chinese? We believe that they may be divided into two classes:

1. Those associated with enlargement of the spleen but without any syphilitic element.

2. Those associated with late syphilitic manifestations.

In this chapter we are only concerned with the former of these. But before proceeding to further discussion of the matter we wish to state as clearly as possible that we view our own theory of this disease as a *working hypothesis* only. The problem can only be finally solved on the post-mortem table, and autopsies are still rare in China.

Cirrhosis of the liver associated with splenic enlargement.

On examining these cases we find in constant association the following symptoms: Alteration in size of the liver, at first enlargement and later contraction, enlargement of the spleen and ascites. In dealing with these cases we exclude all patients with albumin in the urine as being possibly due to nephritis and all cases of anasarca as being the possible results of a blood condition, though anasarca is certainly a late condition in advancing cases of the same disease. Two explanations might be given of cirrhosis under these circumstances:

(a) Thrombosis of the portal vein. This certainly occurs in pancreatitis and peripancreatitis. Why not also in splenitis and perisplenitis? That this is not altogether an improbability is shown by the changes in the portal vein that certainly accompany splenic anæmia. It has been held by West and Goodhart, though denied by others, that thrombosis of the portal vein may give rise to portal cirrhosis in a previously healthy liver.

(b) Splenic anæmia. (Syn., Banti's disease.) (See Fig. 120.)

Splenic anæmia, according to Osler, is a disease with the following characteristics:

First. Chronicity—the disease often lasting ten or fifteen years.

Second. Primary splenomegaly. That is, enlargement of the spleen as the first clinical sign.

Third. Hæmatemesis—probably from varicose œsophageal veins.

Fourth. Anæmia of the chlorotic type. Average 3,000,000 red; 4,500 white; 47 per cent. hæmoglobin.

Fifth. In some cases pigmentation of the skin.

Sixth. Enlarged liver with ascites, sometimes icterus.

According to Banti, the cause of the condition is the production of some toxin by the enlarged spleen. The toxic substance, whatever it is, in its passage through the splenic and portal veins to the liver, induces an atheromatosis, sometimes even with calcareous deposits. The anatomic change in the spleen consists in an increase in size, a thickening of the capsule, frequently with numerous adhesions, and a hyaline degeneration with marked fibrosis of the Malpighian follicles. In the walls of the venous sinuses are peculiar large cells with large nuclei often multiple. Etiologically, little is known of the disease, though malaria is the commonest precursor. In some cases, there seems to be a family tendency to the disease. The prognosis is unfavourable.

Clinical Picture.—As seen by ourselves, the clinical picture is as follows: A man in the middle period of life, anæmic, but not extremely so, except in very late cases, comes to hospital complaining of great ascites. As a rule, he shows otherwise very little signs of disease: there is little or no wasting, the appetite is good, and the general functions of the body show little or no disturbance. On tapping, or before if the ascites is not extreme, a well-marked though not, as a rule, a very great enlargement of the spleen is evident, and the liver can usually be felt about three fingers' breadth below the costal margin. Occasionally the abdomen shows considerable enlargement of the superficial veins. After paracentesis the fluid is rapidly secreted again, and frequent tappings become the rule. (See Fig. 121.) The disease is a chronic one and the patient leaves the hospital in a few months little if any better ; though in a very few cases after a few tappings the fluid ceases to reaccumulate,.

It must be noted that our cases have shown very little tendency to attacks of hæmatemesis.

Treatment.—Treatment is handicapped by our lack of knowledge of the disease. Were it certain that the toxin originated in the spleen, the only logical method of treatment would be splenectomy, except in very late cases, and it would seem that in a few cases this treatment has been carried out with marked improvement. It is not, however, certain what the toxin is and where it is produced. Still, as we have adopted the splenic theory as a working hypothesis, we feel that this operation should be given a good trial, and we propose to do so ourselves as opportunity offers. The serious difficulty in operation is the presence of extensive and very vascular adhesions to the diaphragm which greatly increase the danger of surgical measures. We have tried the operation of omentopexy in some of these cases with a limited success. If operative treatment be refused, we can only perform paracentesis as required, and it is well to try the effect of increasing doses of arsenic, which is stated to act sometimes with good effect.

A disease similar to this, if not actually the same, has been noted by observers in Egypt. See "Egyptian Cirrhosis of Liver and Spleen." Third Report Wellcome Research Laboratories, p. 104.—*J. L. M.*

Venomous Snakes, etc., of China.

An excellent paper by Kreyenberg in *The Far East* (1906) gives the following list of venomous snakes. The commonest is the brown adder, *Ancistrodon blomhoffii*, found especially in the neighbourhood of Kiukiang and Nanking. It is probably not found north of the Yangtze; certainly there are no other venomous snakes found north of the river. Far less common is the crested adder, *Ancistrodon acutus*, found in the Kiangsi Mountains, also near Ichang, and in Fukien. The Chinese call it the cock's comb snake. The hooded cobra, *Naja tripudians*, is not uncommon about Kiukiang; all are of the fasciata variety. It is found among high, wooded hills. In the Chusan Archipelago is another variety of this family, *sputatrix*. The rock adder, *Bungarus candidus*, var., *multicinetus*, is also common in the mountains south of the Yangtse. The yellow *Bungarus fasciatus* is found only in the south, particularly about Canton. Other southern serpents, though rarely found as far north as the Yangtse, are *Callophis macelelandi*, and *Lachesis gramineus*, the former found in Kiangsi and in Fukien, the latter in Hongkong, where it is called the "green bamboo viper." It is a climber; and it is known also in Ningpo. A certain few venomous sea-snakes are met with on the south coast of China, northward of the Straits of Formosa. The author states, however, that the sea-serpents noted in the mouth of the Yangtse and near Ningpo, and also in the sea around the Chusan Islands, are entirely harmless, as are also the huge snakes which live in the Whangpoo and visit the gardens in Shanghai.

It would appear from the foregoing that South China is fairly well supplied with venomous serpents, but as a matter of fact there is little fear of them among the natives and, so far as we hear, no record of any fatality among the numerous yearly foreign visitors to the Kuling Mountains, which are supposed to be the home of several of the worst of these poisonous reptiles. Occasionally treatment for snakebite is sought in the hospitals, and one or two interesting cases of extensive tendonous and cicatricial contraction following snakebite have been reported. It seems hardly worth while to go into the question of specific treatment.

Kinnear, of Foochow, has reported a couple of interesting cases of snakebite of the hand, the extremely bad results of which seem to have been more largely owing to the secondary causes of Chinese treatment than to the primary of snake poison, and under the heading of "Iron Wire Snakes" he writes[1] as follows:

> "I am curious to know what experience other workers in China have had with what our Foochow people call the 'iron wire snake.' A year ago there came to our clinic a boy of nineteen, who reported that when he was eight years old he was playing out of doors, probably wearing no clothing, when one of these little snakes wrapped itself around his penis at about the middle. It was impossible to get it off for some hours and the resulting ulceration had left a deep sulcus of cicatricial tissue entirely surrounding the organ and interrupting the urethra. The urethra was of full calibre on both sides of the fistula. He came to us because he was about to marry and wished the imperfection removed, but left again before anything was done for him.
>
> "My students fully credited the story of the snake and told me that they sometimes fasten themselves upon the fingers of men working in the gardens, strangulating them until they slough off, that they have also been known to strangulate the tails of cattle in the same way. The popular belief seems to be that it is almost impossible to remove them when once wrapped around a part. The snake is about 6 inches long, shaped much like a common earthworm, has about the same diameter, a trifle smaller

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[1] *China Medical Journal.*, XV, 303.

perhaps, and darker in colour. Have seen a specimen, but have not done any experimenting with my own fingers for the sake of science. Am willing to gain a knowledge of the subject at second hand if anyone is ready to impart it."

The doctor makes it clear that he does not vouch for more than the hearsay of these facts, but there must be some foundation for the belief.

Scorpions.—A large part of China is pretty well infested with scorpions, though, so far as we know, they are never found in or about Shanghai or Ningpo. Probably the provinces of Kiangsu and Chekiang are free. The north is especially noted for them. They are extremely poisonous, though not perhaps so fatally so as the Indian varieties. The following method of treatment is given by S. Arlend in *The Antiseptic* (June, 1909):

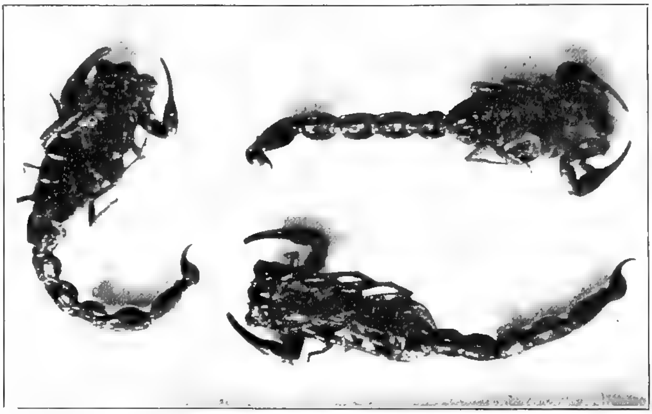

FIG. 139. Scorpions. (*By Jefferys.*)

"It is usual to find a patient resorting to the hospital for treatment for scorpion sting, having been treated domestically with some kind of paste, unction, etc., applied over the part stung, which requires primarily to be thoroughly washed and cleaned. The part should, therefore, be gently washed with luke-warm water. A fine needle is selected and sterilised, and with it multiple fine punctures are made on the part stung, (which can be easily made out both by the information as to the spot furnished by the patient, and in the case of children and other patients in state of great mental confusion and agony by the part being found swollen and dotted with minute points of perspiration), until a few drops of blood or bloody serum could be squeezed out and the finely powdered potassium permanganate is vigorously rubbed down into the punctured parts. At times a few drops of clean water let over the salt while being rubbed will ensure ready absorption and the relief afforded is remarkably rapid, much to the joy of the suffering patient. Care should be taken to see that the salt is fresh and that it is absorbed. The virus contained in the venom of scorpion sting is believed to be formic acid."

Centipedes.—There is an exceedingly poisonous variety of centipede found throughout China in great numbers. It measures fromc one to six or eight inches or more in length, has a black segmented body with yellow legs, a pair to each segment, and a yellowish-red head with powerful mandible pincers. It is usually found under old buildings or wherever a large stone or log of wood has been lying for some time, though it does not hesitate to make its appearance about the house from time to time. The bite is extremely painful and in children occasionally fatal. As in the case of scorpions, it is the children usually whose curiosity prompts them to meddle with the dangerous thing.

CHAPTER XIII.

THE UNDIFFERENTIATED FEVERS OF CHINA.

In the former chapters we have been dealing with diseases having definite clinical entities, and though many difficult questions have arisen as to the nature of their pathology, as far as the diseases themselves have gone, we have been treading on firm ground. In this chapter we can but attempt to step lightly on the uncertain morass of vague description, impossible terminology, and fanciful pathology. Were it otherwise the heading of the chapter would need to be altered.

One point we unhesitatingly affirm, there are fevers, probably not a few, that belong to neither the ordinarily described eruptive fevers, nor to the malarial trio. In some the "fever" is but an incidental expression of grave visceral lesions, in others it constitutes one of the main symptoms. It is especially with this latter class that we have to treat. Three main difficulties meet us in every attempt to deal with the subject of the undifferentiated fevers.

1. The adoption of a Chinese name for a febrile disease without proper investigation, that such a disease really exists as a separate entity.

2. The use, or rather abuse, of nomenclature in connection with these diseases.

3. The ubiquity of malaria.

The first point may be very well illustrated by reference to a disease known as "Han Ping" or "Spring Fever," a complaint prevalent at times in parts of West China.

Wolfendale, of Chung-king, after mentioning that in the spring of 1901 Chung-king was visited by a widespread fever (epidemic) which was very fatal in the homes of the Chinese, and was called by them "Han Ping" or "Spring Fever," proceeds to explode the disease by giving details of five cases admitted to his hospital. The first proved to be typhus, the second and third to be epidemic influenza, and the fourth and fifth to be typical cases of malaria. We believe that not a few of the so-called fevers of China would disappear from literature if thus faithfully dealt with.

The second difficulty, that of nomenclature, has caused endless confusion. There are names such as typho-malaria which being fine sounding have caught on well, despite the fact that no such disease has ever been known to exist. Typhoid complicated by malaria is common;

malaria with a typhoid-like temperature chart is occasionally met, but the typhoid remains typhoid and the malaria remains malaria despite the complications or apparent similarity. Further, there are names which only imply the absence of some other disease, such as non-malarial remittent fever, surely the most remarkable terminology ever adopted for anything at all. As a still further difficulty we have the names of cities, ports, etc., added to the fever, thus I-chang fever, Chefoo fever, Tamsui fever, West River fever, and so on till one could suppose that no city of importance in China considered itself respectable without a fever of its own.

Thirdly, and the greatest difficulty of all in classification, is the ubiquity of malaria, in South China at least complicating every other possible condition. It is far too frequently forgotten that the discovery of malarial parasites in the blood does not prove the case to be one solely of malaria, or the failure to find parasites after a hurried examination of the blood prove that the case is not malaria and that alone.

In an elaborate paper in the China Medical Journal, Von Tunzelmann attempted to prove that the so-called non-malarial remittent fever of Chefoo was due to a special hæmatozoon described and pictured in his article. The proof was to our minds far from satisfactory, and his theory has failed to find much support. We must confess at once that we know nothing whatever of the parasitology of the fevers under discussion, but that does not for a moment detract from the strong probability of some of them at least being clinical entities.

We shall mention first one or two that appear to us to be fairly well proved, and then discuss the diagnosis of a few of the more uncertain types.

Glandular Fever.—An epidemic of this disease in Swatow was described by Cousland of Shanghai in the China Medical Journal. We give in the following lines his account of the disease as it appeared in that journal:

> "In the spring of 1901, two days after arriving at Swatow from Shanghai, a girl aged five developed symptoms of fever, and next day there was a swelling on the left side of the neck and face suggesting mumps, but on palpation found to be caused by enlargement of the lymph nodes posterior to and below the angle of the jaw. On the third day of the attack, the temperature was lower, and in a day or two more the patient was convalescent, but for the enlargement of the glands which persisted for a couple of weeks. In October of the same year the disease prevailed extensively among the Chinese children of the region, and although superficially resembling mumps. the people were not deceived, and the invariable remedy for that trouble—indigo plaster—was not applied. The few foreign children at my station, though not known to come in contact with any Chinese children or infected cases, were attacked.
>
> All the cases seen presented the same features: malaise and fever, followed closely

by some pain in the neck. The temperature rose to 101°, 102°, or 103° with the usual febrile symptoms. Next day or later the lymph nodes under the left sternomastoid muscle were manifestly enlarged and tender and continued to swell, presenting at the anterior border of the muscle. There was also some swelling of the subcutaneous tissues over the affected nodes and extending on to the cheek. The skin was not reddened and the throat symptoms were slight. With the swelling of the nodes the temperature attained its maximum and then fell, leaving the child in a debilitated condition with what looked like chronic enlargement of one or more of the lower nodes of the superior cervical set. This enlargement gradually passed away.

In all cases coming under my observation the only nodes affected were on the left side of the neck; the bilateral condition and the involvement of the posterior cervical, axillary, or inguinal ones was not noticed.

The appearance and the infectious character of the disease suggested mumps and pestis minor, but the differential diagnosis was easy in the first case. Plague had prevailed that summer, but the impartial way the glandular fever included all places in its sweep was very different from the erratic manner plague picks out some place and leaves others untouched. Its apparently direct infectiousness, and its attacking foreigner and native alike, and showing no dependence on unhygienic surroundings or the presence of rats, suffices to distinguish it from bubonic plague, although the first cases of an epidemic, or sporadic cases, might very well create consternation. This is the only epidemic of this disease I have seen in twenty years' medical work in that region, and I am not aware of having seen any sporadic cases among the Chinese. Of dengue also I have passed through but one epidemic, but sporadic cases have occurred in other years.

The girl first mentioned was included in the victims of the above epidemic and had a subsequent, her third, attack two years afterward, almost immediately on landing in the United States of America. It was also diagnosed there as glandular fever.

To fill out a little further the account of this epidemic, I may be permitted to quote some cases of Dr Henry Layng, late port medical officer at Swatow. In three foreign children under his care two had the left side only affected, while the third had involvement of the nodes on the right side subsequent to those on the left; the fever rising again as the fresh nodes were inflamed and lasting ten days, instead of three or four as in the unilateral cases. He also records the occurrence of suppuration in a swollen node in the case of a debilitated Chinese child."

The same disease has been reported again and again from different parts of China.[1]

A Seven-day Fever Characterised by Toxæmic Jaundice.—We think it well for the present to abstain from attempting the more exact designation of this disease until further examination has been made. Several epidemics of febrile jaundice have been reported from China, all of them we believe from North China. The most detailed account is that given by Balme of Tai-yuen-fu in the China Medical Journal. His description we quote as follows:

"So far as could be judged from the few cases in which we ourselves saw the fever spread, the incubation period seemed to be from seven to fourteen days; the onset of the disease being an acute one, characterised by high fever and severe headache, often associated with muscular pains in the back and legs. Jaundice appeared on the third to the sixth day, but was usually preceded by a marked injection of the conjunctival vessels which proved a most valuable diagnostic sign. The liver was invariably tender, though not as a rule enlarged, whilst the spleen was commonly increased in size. Some of the patients had a slight cough which, however, soon passed off. No gastro-intestinal symptoms were present, the patients all being constipated, whilst the tongue remained uniformly moist, though somewhat coated. No albuminuria was found in the few cases that we tested. In two cases in which an examination of the urine was made for the presence of leucine and tyrosine, the result was negative in one, whilst in the other the crystals were not sufficiently definite to be diagnosed with certainty. No blood changes were found in the patients examined.

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[1] See Chapter X, Mumps, etc.

But by far the most prominent and important symptom in each case was toxæmia evidenced not only by the soft "toxic" pulse and general disability, but also by the profound effect which it showed in some instances on the nervous system. This produced serious and even fatal cerebral symptoms in some patients, the extreme headache going on to signs of acute meningitis, succeeded in turn by coma, Cheyne-Stokes breathing, and death. Even in those cases which recovered, convalescence was protracted by an amount of debility out of all proportion to the length of the actual attack or the severity of the initial symptoms, and apparently only to be accounted for by the intensity of the toxæmia.

Another very definite characteristic of this epidemic was the crisis which occurred with almost unfailing regularity about the seventh day. In some cases it was delayed until the eighth; in others, of a somewhat milder nature, it took place on the sixth, or even as early as the fifth, but in every case it was present, the temperature dropping rapidly to subnormal on the one hand, in such cases as recovered or, on the other hand, the symptoms becoming more and more acute and the disease terminating in death. No secondary fever occurred in the few cases we had an opportunity of watching."

Balme himself evidently inclines to associate this disease with the name of Weil. In the absence of so cardinal a symptom as that of nephritis we doubt, ourselves, the correctness of his position.

Urticarial Fever.—Lambert, of Kiukiang, describes in "The Transactions of the Society of Tropical Medicine," April, 1910, a disease to which he gives this name and which is frequently met with in the Yang-tse valley. It appears to us that Lambert makes good his claim for regarding this as a clinical entity.

The causal agent appears to him to be encountered while wading bare-legged in paddy fields or bathing in shallow ponds. Incubation period 10 to 14 days. Disease commences as an urticarial eruption with large wheals 3 or 4 inches in diameter. The eruptive spots remain "out" for an hour or two, continuing to spread. As they disappear the central part first resumes the normal skin appearance. The eruption may continue to appear and fade away, and re-appear for a week or more.

The temperature is normal or but slightly raised in the mornings. It commences to rise about noon and reaches its height which is seldom above 102° F. about six in the evening, from thence gradually falling to normal, its decrudescence being accompanied usually with sweating, The presence or absence of the rash has no effect upon the temperature. which may continue for days after all signs of the former have disappeared. Pulse is comparatively slow. The rash is not confined to the skin, but spreads to the buccal, respiratory, and intestinal mucosa, causing, as the position may be, temporary swelling and blockage of the nasal passages, cough with fugitive patches of dullness in the lungs, and sickness or diarrhœa. Very marked eosinophilia is present.

Drugs probably useless.

To the three diseases given above we add with some doubts a fourth described by Manson in the following lines as:

> **Double Continued Fever.**—In South China I encountered, both in Amoy and in Hongkong, a peculiar type of fever, apparently of little gravity as affecting life, but sufficiently distressing while it lasted. Thorpe has recently recorded a case occurring in Weihaiwei. The disease is characterised by an initial pyrexial stage of from ten days to a fortnight's duration, followed by a stage of from three to seven days' relative or absolute apyrexia, which, in its turn, is succeeded by another spell of about ten days' duration of smart fever, and then by convalescence. Both in the primary and in the terminal fever the evening temperature may rise to 104° or 104.5°. It might be said that such cases are relapses of simple continued fever; but, as I have seen on at least two occasions the same succession of events occurring almost simultaneously in two patients living in the same house, once in husband and wife, once in brother and sister, it seems probable that this is a special form of disease and that the double fever is a constant and characteristic feature. In the case of the brother and sister the march of their fevers was strictly simultaneous, the primary fever, the apyretic interval, and the terminal fever occurring in both patients on the same days. Beyond a certain amount of headache and febrile distress there are no special symptoms so far as I have been able to observe, nor any special complications.

The disease seems to us to merit description as a separate entity, the main doubt about it being the fewness of the cases recorded.

We must now consider the **fevers** attached to which are the names of **various ports, cities, and rivers** too many to be enumerated. It is doubtful if a single one of these will really stand close investigation. Some cases are undoubtedly severe attacks of subtertian malaria. These are short attacks of a malignant form of fever. There are, however, some long continued fevers included in these "place" fevers in which careful examination has excluded the presence of malarial parasites. These cases may probably be divided between true attacks of typhoid fever and true attacks of malta fever. The latter disease has not received the attention it deserves in China; we believe that it is much more common than is generally recognized.

Lastly, under these "place" fevers are included a group where the fever is not severe, lasts as a rule seven days or less, and which is accompanied as prominent symptoms by bone pains, joint pains, and back pains. The prognosis of this form of fever is excellent. These probably correspond with the three-day and seven-day fevers met with in India, and our own opinion is that they are probably all of them atypical attacks of dengue.

Lastly there is a group of cases in which irregular fever forms an important symptom. Doubtless from this group will emerge one or two definite diseases. We actually have in the process of evolution a disease characterised by cirrhosis of the liver, enlargement of the spleen, and fever (see Chapter XII). We have no doubt at all that this will prove to be a true disease *sui generis*. But owing to our lack of exact knowledge the differential diagnosis of this group is still very difficult. Intimately associated with it are the irregular fevers of kala-azar, abdominal sarcoma, and probably certain palludial affections which have not yet been clearly distinguished from malarial fever.

CHAPTER XIV.

ASEPSIS AND ANTISEPSIS AND HOSPITAL HYGIENE.

What to Aim for and How to do It.

The subject of this chapter has been admirably covered by Hart, of Wuhu, in a paper published in the *China Medical Journal* for November, 1907. He sums up the difficulties as follows:

1. The lack of cleanly habits among our attendants.
2. Mode of dress used by the Chinese.
3. The undeveloped technical conscience, as evidenced by such familiar expressions as "just about," "as you please," "never mind," and so forth.
4. The necessity of economy in supplies.
5. The short time we have our cases in hand for preparation.

The first point calls for the long and the faithful **training of assistants**—constant and faithful observation of their methods and, we would add, as a very important factor, such hospital management as will enable them to specialise in their work: for example, a resident for clean and one for dirty cases; a special nurse for the operating-room; the provision of ample facilities for personal and room hygiene, including bathing, care of the nails and hair, and so forth, mops, cloths, and scrubbing brushes. The costume of the Chinese assistant is particularly well adapted to all grades of hospital work and suits the wearer as the toga suited the Roman of old. The costume of the average coolie is practically a pair of pajamas, equally suitable for patients confined to bed as for those able to be up. If one wishes to institute a nurses' uniform, nothing could be happier than a good quality of Chinese blue cotton with a Red Cross sewn on the arm or chest, and the initials of the hospital below it; and for the operating-room, the same in white. They are easily washed, folded and sterilized, and changed in less time than it takes to write it down.

Second.—The supply of **washable underwear** by the hospital and the frequent changing of the same, with special provision for the cleanliness and disinfection of operating-room clothing, linen, blankets, and so on.

Third.—With regard to the third point, **technical conscience**: the Chinese are good imitators. If the surgeon has a good conscience it will do pretty fairly for the staff also.

Fourth.—With regard to the necessity for economy, Hart gives some excellent suggestions, to which we would add, **Do not do more work than you can do well,** and the question of economy will not loom very large. It is all well enough to talk of the wonders that can be done in surgery with a penknife, an old toothbrush, and a slop-pail, but personally we feel that these useful articles can do better service in other fields and belong, with the six-months'-complete-course-in-medicine missionary, beyond the sphere of serious-minded physicians in China. It is useless to say that the quality of a man's work must depend on his distance from the coast. Some of the best work in China is done far in the interior. The Chinese who make our assistants are much the same all over China, and they are whatever we make them, and they know and do whatever we teach them. And the pressure of work near the coast is probably quite as great as it is in the interior, perhaps greater, and none of us have any right to do anything but refuse work over and above what we can do thoroughly well. It is always open to us to select the work we can do best. We constantly read reports of those of us who do not hesitate to refuse to do certain operations because "it is inexpedient" to run the risk of failure. How much more right is it to refuse the same because we cannot do them thoroughly well and with due justice to work already in hand.

Fig. 140.—Male nurses, St. Luke's Hospital, Shanghai.

The fifth point appears to us of special importance. It is true that we have a short time in which to prepare our cases, but when we realise that **a case well prepared** may get well in a week, whereas a case insufficiently prepared may take a month to granulate, we can well devote a little thought and ingenuity to arranging the matter. Dirty skin should be cleaned before it is cut, rough skin should be smoothed, vermin and other possible sources of infection should be eliminated. This takes time and trouble, but it is very satisfactory as compared with buggy hospitals and infected wounds.

FIG. 141. –Staff of the "West Gate" Hospital, Shanghai. The Margaret Williamson Hospital is the model Women's Hospital of China.

The question of asepsis and antisepsis in China is but an exaggerated form of the same question at home. Our assistants are less well trained, our tools are less convenient, our patients are dirtier, sources of infection are greater. But we have the authoritative opinion of many busy surgeons that asepsis can be attained, even under most trying and unpromising circumstances. Let us keep in mind also that many an infection takes place owing to the method of operating rather than to the technic of preparation. For example, a wound which will heal promptly if the stitches are placed accurately with proper tension and at the correct depth, will be strangulated and give extensive facial sloughing if the stitches are irregular, too tight, twisted, or too inclusive. Again, an amputation done in ten minutes will prove aseptic, when the same amputation stretched over an hour will suppurate. A herniotomy without tearing and mutilation of the tissues will heal promptly, whereas another one with rough handling will completely break down.

If we should try to place the matter as to what we should aim for in the shortest possible form, we should say: **Aim for simplicity, and stick to it.**

The simpler our methods, the better they will be understood, the more faithfully and willingly carried out, the more easily watched, and the less chance given for mistakes or omissions. Of course, what is simple in a large hospital is elaborate in a small dispensary. What is simple in New York is elaborate in Shanghai. Let the whole mechanism and technic of our surgery be gauged by our ability to oversee it, and that of our assistants to put it through. An autoclave steriliser is a simple instrument in the hands of a graduated Chinese physician, but a hopeless and unruly thing if entrusted to a coolie. An elaborate glass table is adapted to a hospital with a large and competent nursing staff, but in a small and embryonic institution will prove far less aseptic than Boone's teakwood[1] table. We should make it the rule to have the very nicest things that we are competent to manage and control, and to discard and avoid whatever is beyond us. Hours and days may be wasted in trying to run an X-ray machine without any adequate return in service rendered.

The question as to how we are to attain simplicity we would answer somewhat along the following lines:

1. As to the patient. For clean cases, a routine examination of heart and urine; the hot bath and thorough scrub the night before; the dose of salts; a very weak bichloride dressing on the part. In the morning, enema three hours before operation; a bowl of congee; bath; fresh pajamas and a clean bed. At the time of operation, a thorough scrub with liquid soap and hot water, five minutes by the clock; turpentine, one minute; Harrington's solution, one minute, washed off with sterile water, with sterile slit sheet or sterile towels, held in position with towel forceps, limiting the space exposed to the smallest possible.

"In a very interesting article by Harrington in the *Annals of Surgery* for October, 1904, the *potassium permanganate* and *oxalic acid* method of hand disinfection is condemned as inefficient. Harrington, after a thorough bacteriological study of twenty-two different antiseptics, found that not one of them acted under two minutes, and most of them only after five. After further experiments he found a solution which would kill carbuncle pus in less than one minute, whereas the quickest of the twenty-two antiseptics previously tested, took four minutes to accomplish the same result.

"The composition of this mixture is as follows:

Commercial alcohol (94 per cent.),	640	c.c.
Hydrochloric acid,	60	c.c.
Water,	300	c.c.
Corrosive sublimate,	0.8	grm.

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[1] See page 350.

"This mixture contains 60 per cent. absolute alcohol, 6 per cent. commercial (strong) *hydrochloric acid*, and 1/1250 corrosive sublimate.

"Bacteriological experiments on the hands of assistants that had been immersed in this fluid gave eminently satisfactory results. The solution is known as 'Harrington's solution,' and apparently it has won for itself some reputation, as I see that an author in describing a visit to the clinic of the Mayo brothers at Rochester, Minnesota (*New York-Philadelphia Medical Journal*, July 22, 1905), says: 'As an antiseptic, Harrington's solution seems to be the favourite, and is used both on the hands and on the field of operation."—*Venable, Kashing, in the Chinese Medical Journal.*

"Mayo Brothers' Method.—In this operating-room the chances for infection are reduced by minimum requirements in the number of assistants at an operation; in the handling of instruments and dressings, in the amount of space through which instruments, dressings, basins, etc., are carried. There is no preparation of the skin until the anæsthetic is started on the operating-table, with the exception of shaving, which is done in the ward. The field of operation is thoroughly cleaned with soap and sterile water, using a piece of sterile gauze rinsed well with sterile water, after which follows a light sponging with Harrington's solution. Four sterile towels are then placed in position, surrounding the area of operation. This preparation takes about five minutes, and is done while anæsthesia is progressing, and the surgeon changing his sleeves and gloves. The dressing covering the wound in abdominal cases consists of a strip of gauze, a square of absorbent cotton, and one of common cotton, held in place with strips of adhesive plaster. Over this is adjusted a bandage made of gauze 5 yards long, folded lengthwise of the gauze, for thicknesses. This is put on as a double spica of the groin and makes a most effective and comfortable bandage. When removed in the ward, it is sent to the laundry and returned to the ward for further use." —*Hart, Wuhu.*

In case of emergencies, when the whole preparation must be done at once, a wound, if present, should be covered with a sterile pad and the disinfecting done without allowing anything to flow into the wound. We usually make a practice of painting the whole surface area a couple of times with tincture of iodine, which has very positive germicidal powers and penetrates the skin to a considerable depth.

Iodine Method of Skin Preparation.—Clarke's Clinic, University of Pennsylvania.

Bath the night before. Shave, being careful not to make abrasions. Dry the skin completely. Apply the following solution (10 per cent. iodine in 75 per cent. alcohol) by brush or, far better, by an atomiser with the nozzle pointed somewhat down. Put on a dry sterile dressing. At 7 A. M., iodine solution; 9 A. M., operation and third iodine solution. Close incision and streak with iodine solution.

The advantages are manifold. It has great penetration, avoids scrubbing, is rapid, and is especially applicable to accidents and emergency work. *Caution:* The parts must be dry before application.

The results are absolutely satisfactory. Occasionally there is slight blistering, which is of little importance. It is efficient even when done in emergencies immediately previous to anæsthetisation.

All dirty cases should, when possible, be held over for operation until such time as will allow for the utmost improvement possible in the condition of the skin, the health of granulating surfaces, and the sterilisation of discharges. (See Herniated Testicle, Chapter XV.)

We cannot emphasise too strongly the wisdom of the careful preparation of essentially septic operations, as well as those which may be expected to prove aseptic. It is our own practice to avoid the use of all antiseptics in clean wounds. Freshly sterilised normal salt solution is our invariable medium for washing out in these cases.

As a prophylactic measure preventing infection of compound fractures and wounds to joints and so on, Tucker, of Shanghai, has demonstrated the immense and practical value of Bier's hyperæmic treatment of the part.

For dirty sinuses, pus cavities, tuberculo-septic spaces, and so on, our own preference is for lysol, very weak and very hot, or isol, on the ground that they are more truly cleansing and less toxic than any other disinfectants. The use of bichloride of mercury and carbolic acid is not legitimate in any dilution for internal application to absorptive surfaces. Besides destroying granulating surfaces and retarding the same, we may take it for granted that nephritis and other undesirable and subtle complications not infrequently are attributable to these unwarrantedly-much-used poisons. This is to be understood as our personal opinion.

Post-operative Formula in Abdominal Cases.—Clarke's clinic, University of Pennsylvania.

Morphine, gr. 1/4,
Atropine, gr. 1/150, after all operations.
Heroin, gr. 1/12, repeated four times for pain and restlessness.
Regular catharsis every other day.

2. **The Surgeon.**—White pajamas, up and down, of Chinese make, a waterproof apron from neck to ankles, white canvas shoes with rubber soles, a preliminary disinfecting of the hands, and the surgeon enters the room and disinfects his arms and hands somewhat as follows:

Hot water and liquid soap, sterilised nail-brush, scrub for five minutes by the clock; cleaning under the nails with a blunt instrument and a wet towel or piece of gauze; three minutes' scrub in lysol solution; puts on a long sterilised gown; hair done up in gauze, including the ears and the eyebrows, or a hood with large eyeholes to be tied around the neck.

The surgeon then prepares his patient. It is his part to do so while the anesthetic is being given. Another lysol scrub, and Harrington's solution or sterile rubber gloves, complete his preparation.

The most important point with regard to the surgeon is the following:

Having sterilised the hands—keep them sterile.

With regard to the latter, we would not only emphasise the necessity of eternal vigilance with regard to what is touched and handled by supposedly sterile hands, but the frequent rinsing of the same in sterile salt solution during the progress of each operation; and especially and above all, a complete resterilisation of the hands before passing from one operation to another. It is a tremendous mistake to suppose that one grand preliminary cleansing of the hands will keep them clean throughout the morning's work and in passing from one case to another. It is, moreover, a piece of criminal neglect to submit one patient to possible infection from a previous patient in the course of a day's operating. If rubber gloves are worn, the hands must be rinsed and the gloves changed for each operation.

And in this connection we would repeat the simple and obvious fact that it is the right and privilege of the cleanest case to the first place in the day's work, and so on down the list. There is nothing that will save more infection than the proper and thoughtful arrangement of the day's programme. Start off with your incipient carcinoma of the breast or your ventral fixation of the uterus. Take next your stone in the bladder, if there be no cystitis, or your tonsilotomy. Then comes a case of arthrectomy for tuberculosis, and you wind up with your gonorrhœal abscess and your entropion operations for old tracoma. It would never occur to a sane man to reverse this order completely, but a partial reversal may often be seen in even well-managed institutions.

3. **The Operating-room.**—Asepsis in the operating-room is attained by a process of reducing everything to its simplest form and smallest dimensions, and its furniture to its extreme limits. The operating-room should be in the care of one nurse, who should be entirely responsible for its every detail. We are speaking, of course, of what we may call our "clean" room. We take for granted that badly infected and essentially filthy cases should never be operated upon herein. Probably the best way to manage this arrangement is to have a clean operating-room in which selected cases are treated, and a hospital dressing-room, in which the usual hospital cases are dressed and the dirtier operations performed. Those cases which remain sterile may be dressed in a small ante-room,or in the clean operating-room—the dressing-room, however, to take the bulk of the morning's-dressings. At St. Luke's, Shanghai, we begin the morning's work in our operating-room and stay there as long as there are

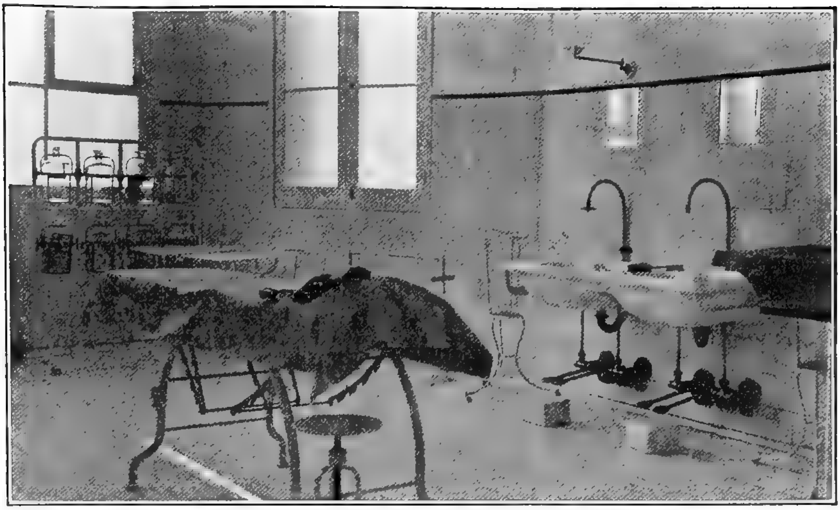

FIG. 142.—A simply furnished operating-room.

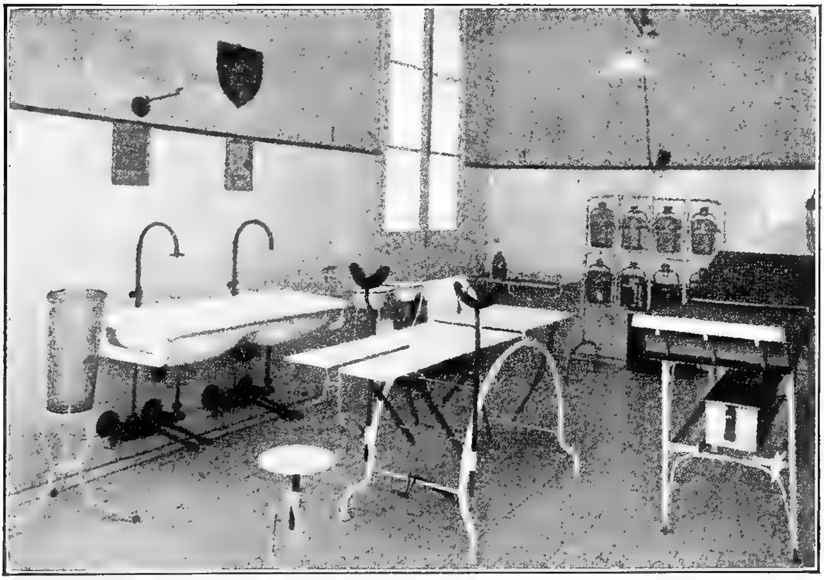

FIG. 142 *a*.—A simply furnished operating-room. On the right is a hot-water table for winter use. (*St. Lukes' Hospital, Shanghai.*)

any tolerably clean or very important operations to be performed. When these are done we proceed to the dressing-room, and finish up with piles, fistula, phimosis, buboes, abscesses, and so forth.

Another useful plan is to arrange to do the opening of abscesses and similar dirty work at the end of the afternoon clinic, in the out patient department, returning the patients, or admitting them, to the hospital thereafter.

In China, unless a foreign nurse has charge of **the operating-table,** it is advisable to forego the joys of the complicated glass table of many parts and most difficult to keep clean, and be satisfied with an enamelled iron table. This should be covered, usually, with a sterilised rubber sheet, and this again by a cotton sheet. The patient, warmly clothed, is laid upon this and the bandages removed, leaving the dressings in place, and all but the seat of operation covered with another cotton sheet. The seat of operation is exposed through a slit in the sheet, and sterilised towels may be used to reinforce and further isolate the parts. The sterile dressing is removed through the opening and the patient is ready for operation.

The one supreme and **most important point** in the matter of obtaining aseptic results is the training of **the assistants to keep their hands off of everything.** Something may be done by having the assistants' hands cleaned under the supervision of the surgeon, but a great deal more can be attained by keeping coolies and nurses from touching anything whatsoever. Instruments should always be lifted with forceps; dressings should be handled only by the surgeon. They should be sterilised in closed metal cases, which are opened by request of the surgeon, who then handles everything himself. And we might go so far as to say that the less handling even he does the better. Sterilised towels should invariably be spread even upon the cleanest of tables, and the instruments in their trays are laid upon these.

We would add, as a special warning, **the imperative need of beginning over again for each case,** and absolutely resisting the temptation to pass, with insufficient time allowance and preparation, from one to another operation. The temptation to do this in China, where things move slowly and delays seem endless, is almost irresistible.

We are heartily in favour of the use of **rubber gloves** for most work in China. Of course, in eye work they are impossible, and in most bone work they are a nuisance, becoming readily torn and losing their value and their reasonableness. But for all abdominal work, herniotomies, and other dainty surgery, and for every conceivable form of dirty operation they are an infinite protection—in the former case to the patient, in the latter, to the surgeon and his future victims. Even if the surgeon feels more at home without rubber gloves, all assistants taking part in the operation must wear them.

The forms of **infection to which surgeons in China are subject** are even more numerous and more appalling than at home. Syphilis is virulent and widely distributed; leprosy is prevalent; all forms of blood infection common; hospital gangrene still found, and the general lack of tone in foreigners living in China is a predisposing cause to minor forms of infection, paronychia, tuberculosis cutis, erysipelas, furunculosis, and so on. (See also Chapter XXII.)

"**Catgut.**—Dry iodine catgut is very useful and is probably the best and does not irritate the tissues unduly. It is easily made. A roll of catgut 18 inches long is rolled up and bound and soaked for eight days in an iodine solution composed of iodine 1, KI. 1, distilled water 100. Then pour off the iodine solution and place the catgut with sterilised forceps into a sterilised vessel containing calcium chloride and it will be dry in twelve hours and ready for use."—*Venable, Kashing.*

"In suture material, silk and horse hair are both easily procured. Glass microscope slides, cut in two, make a convenient spool for the silk, which may be boiled in 1 per cent. soda solution ten minutes; boil in water ten minutes; keep in 95 per cent. alcohol. Horse hair: scrub with green soap, soak in cold water, rinse in several waters, soak in ether twenty-four hours, boil in sterile water twenty minutes, keep in 95 per cent. alcohol.

"Prepared catgut is always an expensive item. In one hospital 180 tubes from Van Horn cost $37.50, while the same amount prepared locally cost $10.00. Another hospital reports a saving of $35.00 on 500 strands by local preparation. Dr. Senn's formalin method is as follows: Roll the catgut, without any previous preparation, in a single layer upon glass rods. Tie the ends securely. Immerse in formalin 5 per cent. for twenty-four hours. Wash by immersing in sterile water for twenty-four hours. Change every hour (running water is better). Boil from ten to eighteen minutes according to size. Preserve in alcohol 95 per cent. to which has been added 5 per cent. *iodoform*, 84 per cent. *glycerine*. This solution can be made by using:

Iodoform emulsion,	dr. 1 1/2
to alcohol,	oz. iv

"**Chromicised catgut** is prepared as follows:

Catgut,	oz. i
Chromic acid,	grs. iv
Carbolic acid, 95 per cent.,	oz. i
Alcohol, 95 per cent.,	oz. xx

"Dissolve oil from catgut with ether, allow ether to evaporate. Dissolve *chromic acid* in dr. i of sterile water, add to alcohol. Lastly add 95 per cent. *carbolic acid*, which gives the solution an amber colour; add catgut without winding. Keep in solution from forty-eight hours to one week, according to size. Keep jar tightly covered. Roll on glass rods a single layer. Tie ends securely and boil in 95 per cent. alcohol, three times, two days apart, boiling in all forty-five minutes, keep in 95 per cent, alcohol. The ordinary Mason jar will answer instead of the regulation metal boiler, if the precaution of filling the jar only two-thirds full and not screwing the cap down absolutely tight. There must be always enough alcohol to cover the catgut, one can count upon the evaporation of about one-third of the alcohol in boiling. Ends of catgut may be used over by boiling again in absolute alcohol.

"There are occasions when one feels the necessity of using **iodoform gauze,** which can be prepared by the following simple method: Make gauze strips of the desired length and width and immerse in the following solution: One pint saturated solution of *boric acid;* to this add green soap to make a good suds, boil half an hour. After this, add to boiling solution 1 ounce of *iodoform* powder by measure; boil for ten minutes exactly. When cold, add *carbolic acid,* 95 per cent., 1 drachm. Stir solution often. Roll strips and keep in sterile jars. Castile soap is a good substitute for the green soap."—*Hart, Wuhu.*

"**Kangaroo Tendon.**—Soak in ether for two days to remove the fat: 1–500 solution of sublimate in alcohol for six hours; then transfer to pure alcohol (for stiff gut), or to alcohol, 1000 parts, glycerine, 100 parts, sublimate, 1 part (for soft gut).

"**Silk and Silkworm Gut.**—Wrap on a clean glass slide or spool, and boil for five minutes in a 0.6 per cent. of salt solution for each operation."—*Fowler, Hiaokan.*

4. **The Clinic.**—There are several points about asepsis in the clinic which it may be well to note.

A good-sized fish-boiler (one or more) should be kept actively bubbling throughout the clinic hours, and into it should be thrown, after wiping, every instrument used in any way whatsoever. Even knives and scissors —for though they may become dull, they may be sharpened from day to day, and no form of sterilisation other than boiling is sufficiently rapid and safe to warrant passing from one patient to another in the hurry of treating 100 or 200 surgical patients in an afternoon.

"*Instruments.*—Do not boil them in soda solution, but in a weak lysol one, and they may soak in it all night without fear of rusting. Knives may be boiled if soft leaden sheaths are made for the blades and their cutting capacity will not be impaired." —*Venable, Kashing.*

"It is a problem to disinfect the instruments that are constantly being used in the dispensary. Some keep a vessel containing water that is kept boiling all the time and drop the instruments in after using. Our way is to wash the instruments and immerse in 95 per cent. carbolic acid, which is wiped off or washed off with alcohol. This keeps the instruments sharper and in better shape than the boiling process, and is practically as good for operations one would do in a hurry during an out-door clinic. We keep our carbolic solution and alcohol in large-mouth salt bottles. I may say that we never boil a knife, but depend on the above method, even in the most particular cases, believing it to be fully as reliable as the two minute boiling, and the knives hold their edges."—*Logan, Changteh.*

"In the absence of coal gas, the lady of the house has at her disposal, in the 'Perfection Blue-flame **Kerosene Gas Stove,"** a long-felt want, and a means of supplying a strong, clean, odourless heat similar to that of a very large Bunsen gas burner, useful for a thousand and one purposes in addition to keeping her house supplied with a perfectly sterilised supply of cold drinking water, with a minimum of worry. No house should be without one of these stoves, which are quite light, can be carried about by anyone and placed in any room in the house. They can be procured either as a set of three burners in one stove or as a one-burner stove. They are invaluable where boiling water is wanted in a hurry, as in cases of illness, to say nothing of their convenience for sick-room and other cooking purposes; and it will be found that the highest grade of kerosene answers best in these stoves, as it leaves less residue behind it on the burner."—*Customs Health Report, Wuhu*, 1905.

An instrument case should contain the older and less perfect of the hospital instrument stock. And hanging from the ceiling should be two or more large douches with nozzles able to reach to all the tables. The centre of the room should contain one or more specially constructed dressing stands, double or triple-deckers, with drawers below and extension shelves on the ends. It is well to allow the patient to remove his own bandages, and taking the dressing from without, to peel it off with his own hands. The surgeon should allow the nurses or orderlies to cleanse the wounds, remove the scabs, syringe out, wipe, and so on—and if taught from the beginning that there is no other way allowable, they may be trained to carry out the whole procedure, in almost every instance, with dressing forceps and other handy instruments, not touching the wound or the immediate dressing with their hands at any time. The immense gain to the patient and to the workers from following out these directions can only be appreciated by observing the procedure in a clinic where hands take the place of forceps and infected hands pass from case to case, and comparing the two methods.

In dispensary work, cleanliness and the isolation of each patient from contact to or from any other patient are the points to be aimed at. Asepsis is impossible; antisepsis, unless very gently undertaken, is a most potent factor in delaying the progress of granulating surfaces and interfering with the even tenor of the healing process. We would make an exception, and use strong antiseptics in the first dressings of many of the filthy and disgusting cases as they first present themselves to us. A leg ulcer of five years' duration is benefited by a large pail of hot lysol, or Jayes' fluid, and even a scrubbing brush or a piece of rough gauze will help matters considerably. But after the cleansing has once been thoroughly accomplished, and the stench of ages removed, strong antiseptics will do far more harm than good, and sometimes completely block the progress of healing.

5. **The Drug Store.**—The drug store may be a source of infection to many. The hands of the druggist, the returned bottles, the handled prescriptions, tickets, and the dust of ages, may be mixed with ointments for granulating surfaces and eye lotions in such a way as to mitigate their efficiency or endanger the life or sight of the patient. Regular provision for the boiling of bottles, for the cleansing of hands, for the locking up and covering over of drugs and drug-making utensils, regular dusting and cleaning of the room and its furniture—and, we think, a separate

abiding place for the daintier and more delicate preparations—may be counted upon to considerably assist in the results of the aimed-at asepsis.

6. **The Wards.**—The largest factor in attaining asepsis as far as the wards are concerned is having a separate building for the clinic, its patients, and all its operations, so that neither the dust nor filth nor confusion of the clinic life can be heard or seen or do its deadly work upon the wards. Ventilation, regular cleaning, the regular inspection of chambers and bedpans, commodes, and spittoons, the frequent changing of the clothes and bathing of the patients will do their part; but if the filth of the dispensary is allowed to mingle with the life of the wards, one may despair of results.

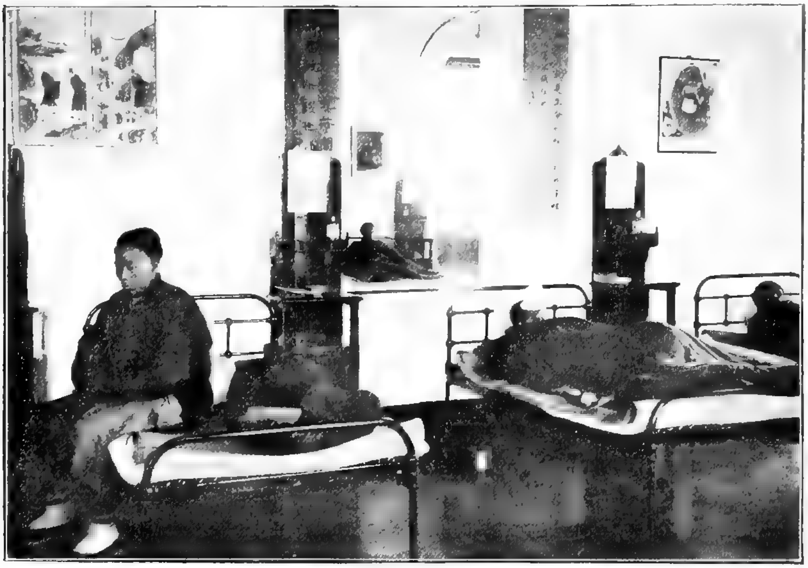

FIG. 143.—A ward, showing a convenient form of bedside table. Note also the bedding: underneath a straw mattress, then a straw mat, one small pillow and a large warm Chinese quilt.

"**Bedding, etc.** From the commencement of the work in 1882 we determined to provide bedding and clothes for the patients, which plan has been carried out till now." *C. M. S. Hospital, Hangchow. (Main.)*

Of **baths,** the practice in the hospitals of China is a variable one. The proposition of bathing every Chinese patient every day is one which may be faced with terror. We do not think it is done in any institution in China or, for that matter, anywhere. We can hardly imagine a Chinese tolerating the practice. On the other hand, the disposition of some hospitals to allow their patients to go more or less unbathed is assuredly even more terrible. A good rule for practical work is to make an absolute law that no patient shall enter the wards without first having submitted to a radical hot-water-and-soap performance, and a hot bath before operation.

A regular and **frequent cleaning of the beds** is essential, since certain forms of vermin are common. This is not true of pediculi, however, but is particularly true of bedbugs. Pediculosis capitis is not common, corporis almost unusual. There are plenty of bedbugs, but the Chinese garments do not harbour them particularly well and yet we find them in the hospital in plenty. They sometimes infect the floors—coming out at night and climbing into the beds. We have no hesitation in recommending the simple construction of the Lawson Tate style of beds for general use in Chinese hospitals, and particularly will the narrow, low, and heavy-framed variety be found satisfactory. Six feet 3 inches long is ample, 2 1/2 feet wide quite enough; and the Chinese are so miserable upon high beds that it is worth the surgeon's while to suffer from chronic backache in order to keep his patients from climbing out and sleeping on the floor.

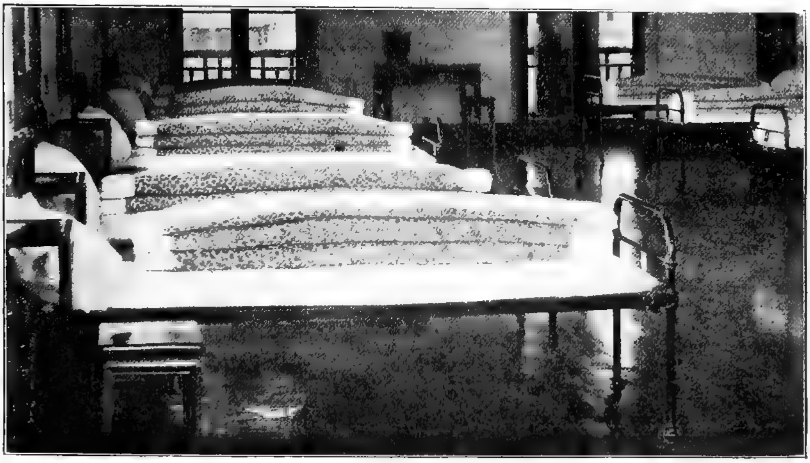

FIG. 144.—A well arranged ward. At the end is seen a dining table for convalescents. The small tables and stools are of the native pattern. Note the bedding: underneath a straw mat, then a straw mattress, one medium-sized pillow and a quilt. There is a sheet here used over the mattress.

"Mosquito nettings were also purchased which, put on movable iron rods, can be folded together during the daytime. We have to provide our patients with tea and a difficulty has been to keep it warm. We have designed for this purpose a large enamel receptacle, which was put within another one of wood, and a wide space between them filled with Chinese wool. In this way the tea poured in in the morning could be drunk still warm in the evening."—*Tungkun Hospital Report*, 1905.

An important factor in ward asepsis is, as in every hospital, **not to overcrowd the wards.** A good **rule** is to calculate the allowable number of patients for a given ward, to cut out one for every ten in the ward, and to forbid, absolutely, exceeding this limit under any circumstances short of war and earthquake. The temptation to take in one more patient and put him on the floor is almost irresistible. "He needs it so badly and the beds are all full and nobody can be turned out." The trouble here is, that if you take in one to-day, there will be just one extra to-morrow, and one more extra the next day, and by the time the two weeks are up there will be one patient between each pair of the fourteen beds, and the ward will smell, and the wounds will suppurate, and the surgeon's conscience will have played him a very false trick.

Dressings should be done early in the morning. All unimportant ones, or well-understood ones, before the arrival of the surgeon; only the critical variety to be kept until his appearance. Many of them may be done at the bedside, but those which greatly expose the patient should be done in the dressing-room, which should be thoroughly dried and heated by a stove or open fire, if necessary, such as will ventilate and not pollute the atmosphere. It is not customary to heat wards in China, and even when heated, they are draughty and exposing to uncovered patients, and many a case is lost through such exposure.

A simple ward dressing carrier may be used from bed to bed and will save a great deal of moving of patients. For those who are taken to the dressing-room, however, we recommend the use of such a ward carriage as that designed by Myers, of Shanghai.

For the dressing-room we strongly recommend Woodward's (Anking) plan of having a set of four to six **Boone teak tables** upon which

"H. W. Boone described his table thus:

"The idea is, table one solid slab, not a single crevice in it, legs joined on water-tight, no acute angles, no corner where dirt can lodge or be concealed, every part of, including bottom of legs, rounded and polished so that it cannot hold dirt, and it can be sponged clean in a few minutes for another operation. The table is made rather low, with a slight incline from head to foot, is curved on the surface so as to cause fluids to go toward the foot and not splash over the sides. At the foot, under the table, two rounded irons are screwed into the wood, after the auger-holes have had white lead paint put into them, to make a water-tight fit. I have four tins made to fit the table, so as to change them when soiled. Length of the tin, 2 feet, width 10 1/4 inches, depth 2 1/4 inches. This tin is laid upon the two iron supports, and it is tied on with a *fresh* piece of cord, to keep it in place, a new piece being used each time. The table is purposely made low, in order that blocks may be put under the legs; by removing the foot-blocks, that end of the table is depressed while the head is elevated; and *vice versa*. Size of blocks, square 7 1/2 inches; thick 4 inches. These blocks to be of hard wood, without cracks, all corners and edges rounded off, polished smooth and varnished; table to be made of fine-grained hard wood, without a single crack or defect in any part.

"Dimensions.

"Length, 6 feet 3 inches.
Width, 1 foot, 11 inches.
Thickness of table slab, 2 1/4 inches.
Depth of curve in upper surface, 5/8 inch.
Height at head of table, 2 feet 9 1/2 inches.
Height at foot of table, 2 feet 7 1/2 inches.
Length of frame for the legs, under the table, 4 feet 9 1/2 inches.
Width of frame, under the table, 1 foot 8 1/2 inches.
Thickness of frame under the table, 1 1/2 inches.
Circumference of legs above, 1 foot.
Circumference at bottom of legs, 9 1/4 inches.
Length of iron pieces under foot of table, 7 inches 3/4 inch rod iron.

The frame is fastened underneath to the table by long and strong screws, which are countersunk and the heads filled in. In putting the table together no glue is used, but white lead paint is put between all joints before they are put together to make them water-tight. All joints must fit perfectly.

This table looks very plain, but to accomplish what is intended it *must* be of the most perfect workmanship in every part, and it should last for forty years, as there is nothing to get out of order. Paint it with Ningpo varnish or white paint, and the surface will show any dirt adhering to it. With Clover's perineal crutch perineal operations are readily done, and the tin at the foot of the table keeps the operator clean. To recapitulate: it is very strong; cannot get out of order; it is, and can be kept, clean and aseptic with the least possible amount of trouble; dirt is easily seen on the smooth surface; combined with the tin at the foot, it drains dry without any splash while one is operating. Compared with other tables, its cost is moderate. Present price, Mex. $20 to $30.

the patients may be prepared for dressing, or for minor operation, and the surgeon pass rapidly from one to another, so saving greatly in time and in efficiency. Even the smallest hospital or dispensary will find two such tables, side by side, sometimes almost cut time in half; and in the larger ones, where several workers may be engaged at the same time, the gain is enormous. For both the clinic and the dressing-room we have found very useful a form of **dressing holder** with drawers, and with shelves in tiers, which may be approached from all sides and so serve a large number of workers. We also strongly recommend the use of a form of **footstool,** which we saw first in the Pennsylvania Hospital, of Philadelphia, which is so constructed that the patient places his foot or his heel upon the stool and so relieves the strain of holding up an inflamed leg or foot, as well as bringing it up for the observation of the surgeon and saving his back as well as exhibiting the part to the best advantage. At St. Luke's we have a special bench for leg dressings, with a row of these stools (which may be made as individuals or as one long rack) placed in front of it. Here the leg patients learn to gravitate and one may pass down the line with the greatest satisfaction.

7. **Finally, as to the General Hygiene of the Institution.** – Beginning at the front door, a most practical first step may be taken by requiring all Chinese to remove their shoes and put on straw sandals or Japanese straw slippers before entering the building. In rainy weather the amount of mud and dirt tracked by Chinese shoes is something appalling—even mopping the floors four times a day cannot approach the pace necessary to meet the conditions. Even in good weather, the cloth shoes are extremely dusty and the leather ones hobnailed. At least half the dirt of the hospital may be eliminated by this procedure, and the floors may be kept clean and retain their polish. The method is practical, makes no bad feeling, requires simple apparatus—namely, a doorkeeper (which we always have, anyway), a set of pigeonholes, and perhaps tickets for the shoes. Some will walk in stocking feet, others prefer bare feet—all are allowable. Beebe in Nanking has highly polished hardwood floors throughout the institution. He follows the suggested method. The floors are rubbed with a woolen cloth on a mop a couple of times a day, and occasionally a preparation of wax is rubbed in. They are not washed, but wiped and rubbed, and the result is excellent. For dispensaries and out-patient buildings cement floors are to be recommended, but for hospitals proper, not so. Near the entrance should be a very simply furnished receiving room and an adjoining bathroom, where in-

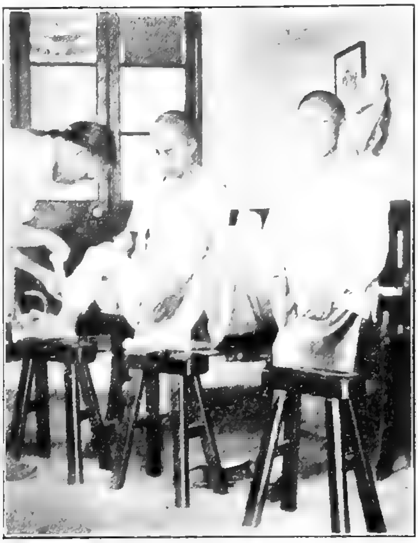

FIG. 145. Leg rests for dressing ulcers, etc. (*St. Luke's Hospital, Shanghai.*)

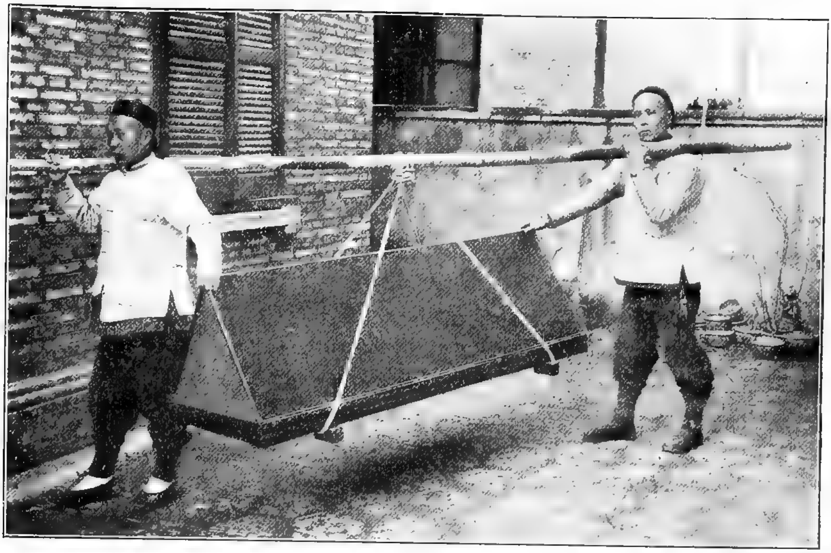

FIG. 146.—Boone ambulance for native cities.

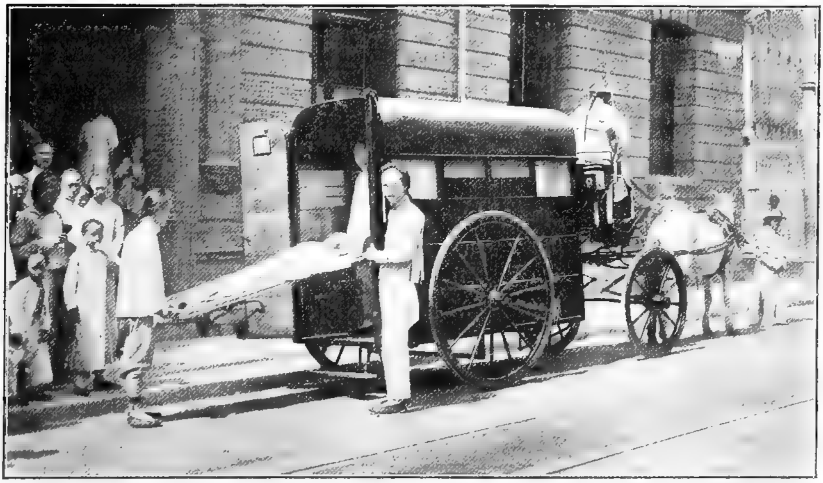

FIG. 147.—St. Luke's Hospital ambulance, Shanghai. Built in China.

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coming patients may be undressed and bathed and from which their soiled clothes may be removed to an out-building for sterilisation.

"I have the floors varnished with Ningpo varnish and then apply a mixture of paraffin and turpentine. The mixture is about one part turpentine and two parts paraffin. It is kept liquid by putting the dish in a larger dish of hot water while it is being applied. Two men apply it and two others come after rubbing it in so that no excess is left on the floor. Woolen cloths should be used in applying it and woolen cloths should be used in wiping up the floor every day. Use no mops or wet cloths in daily cleaning of floors. A floor brush should be used for the dust and then a woolen cloth for polishing the floor. With such a floor it is unnecessary to tell a patient not to spit on the floor. As a rule a patient will instinctively take off his shoes on entering the ward, although it is not necessary for him to do so."—*R. C. Beebe, Nanking.*

Some hospitals have cement floors, at least on the ground. They are cold and unsightly, but easily kept clean and wear well.

"In regard to a Chinese kitchen the *sine qua non* is a large flue in the chimney or if the range is a large one, more than one large flue. It is impossible to keep a kitchen clean if smoke and dust are coming out of the place where the fuel is put in. To get large flues made free from any obstruction requires eternal vigilance while the chimney is building. You will have to keep watch of the work. It pays to have a fine, neat and clean kitchen. A cook feels that he must live up to his environment and the patients get better food. There should be a chimney for every two kettles. Our kitchen is not up to my ideal by any means and I hope to improve it soon but it is better than most Chinese kitchens and I have found that money invested therein improvements pays well."—*Beebe, Nanking.*

"The management of the kitchen applies to the men's hospital alone, as the other hospitals are run on a different plan. We employ a head cook, who engages other four to assist him. The contract with him is at the rate of 12 cents per day, or $3.60 per month for each patient, which sum he receives, whether the patient is on special diet or not."—*Chinese Medical School Hospital, Hangchow* (*Main*).

CHAPTER XV.

ABDOMINAL OPERATIONS.

General Considerations. Special Operations. After-treatment.

General Considerations.

The Operating-room.—It is doubtful if in China, at present, it is ever wise to undertake an abdominal operation in the patient's own house. The difficulties of obtaining proper light, a reasonable amount of cleanliness, a suitable table, and freedom from interruption are so great as to militate heavily against the success of an operation performed under the conditions met with in a Chinese house. The only exception we would allow to this rule is the operation for external strangulated hernia, and even in this case we would rather run the risk, though considerable, of moving the patient into a hospital before operating.

On the other hand, it is an absurd idea to suppose that an operating-room such as can be used for general work is unsuitable for abdominal operations. We have known of days spent in preparing a room by fumigating, whitewashing, and scrubbing before it was considered in a fit condition for the performance of an abdominal section. All that is required is a decently clean room with a good light from one side at least.

Instruments.—It is essential that all instruments should be prepared by boiling or steam sterilising for twenty minutes. Instruments should never require to be hastily got from the cupboards and perfunctorily sterilised in the middle of an operation. The instruments needed for a case of doubtful abdominal disease where the operator proposes to make an exploratory incision and proceed as he finds necessary on completing the diagnosis, are as follows:

Two scalpels. Must be perfectly sharp.
Two pairs dissecting forceps.
One pair straight scissors. Blunt-pointed.
One pair curved scissors. Blunt-pointed.
One pair scissors. Kept separate for ligatures.
One director.
Two probes. Long and short.
One aneurism needle.
One sharp-pointed pedicle needle.
One pair wound retractors.

Eighteen pairs artery forceps. Kept for use in a separate dish.

Two pairs Lane's intestinal clamps	Or according to the surgeon's individual preference.
Two pairs Doyen's intestinal clamps	
One needle holder	

Needles. Intestinal and abdominal wall.
Ligature and suture material.

Needles.—For the suture of the intestinal wall, needles of round section should be used; these are now made with all curves that could be desired. Personally, we generally use ordinary straight sewing needles.

Ligature Material.—Every surgeon probably has his own preference in this direction and, properly prepared and employed, there is probably little to choose between the different materials used. For ourselves we are now employing linen thread for everything except the skin wound for which we use silkworm gut. Linen thread is made in three strengths and its great advantage is that it can be boiled almost any number of times without becoming rotten.

Sponges and Pads.—It is now customary to use sterilised gauze swabs for all operations. We confess to a great preference for the old-fashioned marine Turkey sponges, especially for abdominal work. These should never be used, however, unless the surgeon himself prepares them or a European nurse who has been trained to prepare marine sponges aseptically.

The method of preparation is: if new, to beat the sponges well, to remove fragments of shell and sand, washing in clean water with the same object, soak for forty-eight hours in strong solution of washing soda, wash out in many changes of clean water and soak in 1 in 20 solution of acid carbolic for forty-eight hours at least. Store in 1 in 20 carbolic. After use, the sponges are washed very thoroughly to remove all traces of blood and are then placed in soda solution as before.

In more than 150 consecutive abdominal operations we have never had a case of sepsis (excluding cases where the bowel was already perforated) and are thoroughly satisfied with the great advantage that marine sponges give over every form of swab.

During operation the sponges when filled with blood must be rinsed out with cold sterilized water before transferring to whatever lotion may be in use. Marine sponges should not be used after pus is discovered, or when the bowel is opened.

Flat pads for holding the bowels back are best made of a double layer of thick cellular cloth, which after being boiled for half an hour should be stored in 1 in 20 carbolic.

A list of all instruments and sponges used in the operation should be kept and these should be counted over before the abdominal wound is closed. If marine sponges are used from two to four will be found sufficient for any operation.

Preparation.—The patient should be prepared as for any surgical operation. If possible a bath should be given the night before, and a special suit of clean clothes worn for the operation. In Formosa at no time need the operating table be heated, but in parts of China out of the tropical zone attention must be given to this precaution as chill greatly increases the danger of shock. In emergency operations, where no preliminary preparation of the patient has been made, we paint the whole surface of the abdomen with linimentum iodi a few minutes before the operation and make no attempt at washing at all.

Asepsis v. Antisepsis.– This question has been already dealt with fully in the previous chapter and but a few remarks will be made. There is no possible doubt that all antiseptics being active poisons to the tissues are open to grave objections. The ideal operation is the aseptic operation. On the other hand, the danger of sepsis is infinitely greater than the danger of antiseptics, and few hospitals in China are so well managed and few patients so well prepared as to avoid all danger from sepsis. For the sake of the surgeon's peace of mind as well as for the patient we advise that in most places antiseptic surgery be practised. For ourselves we use 1 in 60 carbolic for our instruments and for abdominal operations 1 in 4000 solution of perchloride of mercury for swabs and sponges. Any efficient antiseptic will, however, suffice, but it should be remembered that in abdominal operations the peritoneum itself, our great defense against septic germs, will be damaged if too strong an antiseptic be used.

We might here remark that the efficiency of the peritoneum in destroying septic material is hardly sufficiently recognised.

While we advocate the greatest possible care in every operation, for the peace of mind of the surgeon we would state our certain opinion that the peritoneum as compared with the other tissues of the body is relatively very resistant to septic infection and a case of septic peritonitis occurring after a simple abdominal operation is in itself a proof of more than usual carelessness on the part of the surgeon or his assistants.

The question of the use of gloves in abdominal operations is an important one. Considerable manual dexterity is required to accomplish speedily a good deal of the abdominal surgery with which we have to deal. Undoubtedly some manual dexterity is lost by wearing gloves. We are therefore ourselves rather opposed to their use by the surgeon in chief. All assistants, however, should wear them.

The Anæsthetic.—The question of the anæsthetic used is, in China, to a great extent a national one. British surgeons almost universally employ chloroform; American surgeons very frequently employ ether. In referring to the former anæsthetic it must be remembered that apparently the Chinese take chloroform far better than their western brethren. Whether it is the absence of "nerves" or the rarity of the alcohol habit or some other reason it would be difficult to say. We incline to the first explanation.

Certain it is that deaths under chloroform are extraordinarily rare in China, and we believe that this anæsthetic may be employed without any serious anxiety while it gives the great advantage of a quicker induction and better relaxation than does ether.

For ourselves we employ chloroform on an ordinary Schimmelbusch inhaler, no complicated apparatus is required. In ordinary cases we use pure chloroform; at the end of an hour if the operation is not completed we continue with half chloroform half ether on the same inhaler.

We quote the following notes on the administration of ether as given by American surgeons:

In China even American surgeons prefer for routine work chloroform to ether. But in cases of shock or cardiac weakness ether is far the safer and more reliable anæsthetic. The modern administration of ether is by what is known as the open or drop method. This, as used in the Mayos' clinic was described by Barrie as follows:

> A large sized chloroform drop-bottle or a special ether can may be used. If the latter, the cork is niched with two longitudinal grooves, one of which is shallower than the other. A cotton or gauze wick is laid on the larger groove and the cork inserted in the container. The cotton wick protrudes about an inch from the can and serves as a dropper. By clipping it bluntly, the flow of ether is retarded, and for a more rapid drop it may be pointed. A 4-ounce size is most serviceable, but it is well to prepare two cans, a 4-ounce and an 8-ounce. The larger serves to anæsthetise the patient and the smaller is sufficient to continue the narcosis when once established. Add to these an ordinary Esmarch inhaler covered with two layers of stockinet, and the apparatus is complete. To protect the eyes a gauze sponge moistened with water is laid over them, or two rounded discs of rubber tissue may be pressed over them with the warm hand. Should ether get into the eye, several drops of ol. ricini instilled will prevent conjunctivitis. The inhaler now in place, the ether is dropped upon it from the larger tin carefully as though chloroform were used. The face soon becomes flushed, and then it is time to retard evaporation by folding a towel or strip of gauze round the inhaler, leaving only a small area of the dome uncovered to receive the ether which is now given much faster.
>
> The whole procedure should require only from three to five minutes and as soon as narcosis is established the large tin is laid aside and the small one used. As more ether is required than chloroform a fairly rapid drop is necessary to continue narcosis. Do not permit your patient to talk as this tends to excitement.
>
> To breathe naturally is the object aimed at, and to ask him to blow it away "or breathe deeply" is poor policy, tending to produce a sense of suffocation, and struggle is sure to follow. The color of the skin, quality of pulse, regular and deep

breathing, and the relaxed lower jaw give the picture of a safe and surgical anæsthesia. It is quite unnecessary and unscientific to test the corneal reflexes as nothing can be learned from the cornea that cannot be better learned by the other signs. The rate of a pulse is of no great value. The oxygen-tank, tongue forceps, and hypodermic are seldom employed.

The early appearance of symptoms is detected and prevented by permitting a plentiful supply of fresh air rather than endeavouring to treat symptoms by the above agencies after they have arisen. When the tongue presses upon the glottis it is drawn forward and to one side by the fingers armed with gauze rather than employing the tongue forceps or ligature. Artificial respiration is almost unheard of, and after ten years' trial this "open method" has become the method of choice.

As most English surgeons are not familiar with this method we have given it at length.

Spinal Analgesia.

The question of spinal analgesia is still under much discussion.

It has become pretty well acknowledged that spinal anæsthetisation has certain distinct dangers as well as objections because of its accompanying consciousness. But, as a recent editorial in the *New York Medical Journal* says, local anæsthesia in its proper sphere is a boon, for general anæsthesia has not yet been freed of all drawbacks. We acknowledge its dangers, which are established. Its objections are such as can hardly be realised without personal experience; but our own practice has made it evident that it has a distinct place in surgery in China. Anything that can be done with a needle will readily obtain the consent of a Chinese. We have used it chiefly in amputations of the lower limbs and it is very **applicable** to all operations about the rectum, genitals and bladder, including piles, fistula, calculus, castration, urethrotomies, prostatectomies, colporrhaphies, varicocele, appendectomies, fracture reductions (not dislocation reduction) but not where shock is present. In these ether should be used. Fear and extreme youth are contrary indications. All laparotomies must be done in the Trendelenburg position. By no means infrequently the problem is presented to us of operation upon a patient whose lungs, heart, or kidneys, especially the two former, do not warrant the general anæsthetisation, and where spinal anæsthetisation gives the better chance. For example, we recently amputated a leg in a child whose ankle was riddled with disease and whose lungs showed incipient tuberculosis, with tremendous improvement in the health of the patient and complete satisfaction during and after the operation. It is not frequently that the method is called for, and we have never seen any bad effects whatever from its use. It is easy of administration and usually thoroughly satisfactory. Our own practice has been to use a 2 per cent. eucaine or cocaine solution, put up in sterile vials as in the preparation of antitoxin: 30 minims for an adult, less in proportion for a child. Cocaine gives the better analgesia, eucaine gives less cerebral symptoms.

Professor Gennesco of the University of Bukharest has recently strongly advocated a combined solution of stovaine and strychnine, which he injects at a higher point than that usually chosen by operators, and it would appear that he has demonstrated the advantages of his method.

The **objections** from consciousness on the part of the patient are almost always overcome by a preliminary hypodermic of morphine, given fifteen minutes before the spinal injection. A large hypodermic syringe with a stiff, long needle is used for this latter; the area of the lumbar spine is thoroughly sterilised, preferably by the iodine method (see Chapter XIV). The point of election is reached according to a diagramme after Stooke, Ichang, "a line across the upper level of the iliac crests crosses the spine of the fourth lumbar vertebra: go half an inch below that line and a little to the left of the middle line." The patient should be seated (not necessarily so) in a **chair** with his knees apart and be made to stoop till his hands touch the ground. The needle is then passed in a direction slightly upward. The same posture may be attained on the bed, laterally. Of course no air must be injected. When a sense of resistance is lost one may be confident of being in the canal, and this is confirmed by removing the barrel and allowing a few drops of spinal fluid to flow. The barrel is then replaced and the solution slowly injected. The patient is then left quiet and kept warm for twenty or thirty minutes, when he will probably be found half asleep and the lower half of the body entirely anæsthetic.

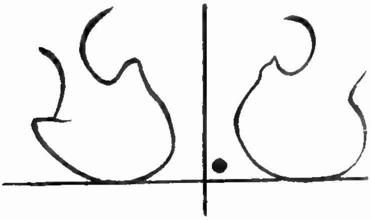

FIG. 148.

A few **precautions** are suggested. On account of idiosyncrasies, preparation must be made in case symptoms of cocaine poisoning appear. The patient's face should always be covered before the immediate preparations for the major operation are undertaken, and kept so. There must be sufficient assistants at hand to control nervousness and restlessness, should they be manifested.

Unless a proper anæsthesia is attained, the operation should not be begun. Promptness and rapidity will enable a surgeon to accomplish results which dilly-dallying will prevent, and it must be remembered that a period of more than twenty minutes cannot be depended on. It will be found at times that a whiff of chloroform will complete an imperfect spinal anæsthetisation. A greater degree of shock may be expected than under the complete anæsthetisation. All proceedings should be quiet and without comment. Careful technic will obviate meningitis. Headache is the commonest undesirable after-effect, but collapse, vomiting, high temperature, and so on, occur at times, usually to disappear.

Local anæsthesia with cocaine or similar chemicals is not sufficient for satisfactory work. We have removed a small ovarian cyst under cocaine anæsthesia but the absence of relaxation of the abdominal muscles and the pain on handling the peritoneum made us decide never to repeat the experiment. For strangulated hernia it is more satisfactory but here too the depth of anæsthesia leaves a good deal to be desired.

Local Anæsthesia (Schleigh's Anæsthetic).

℞. Sodii Chlor.,	gr. ii.
Cocaine Mur.,	gr. i.
Morph. Mur.,	gr. 1/4.
Aquæ Distil.	℥ii.

Use in hypodermic syringe.

—*W. H. J.*

Speed.—There is a pretty general opinion among a good many surgeons that speed is of very minor importance nowadays. This may be to some extent true of the operations of general surgery. It is certainly untrue as regards abdominal surgery in China. In China we are usually without a skilled anæsthetist and often the patient has to do without nursing. In these cases we consider speed of the utmost importance. An operation on the bowels which lasts more than an hour in itself threatens the patient's life. Every minute of prolonged handling of bowel and peritoneum adds materially to the shock.

While important points of technique should seldom be sacrificed to time, there should be absolutely no dawdling over an abdominal operation; from first to last the surgeon should work at the utmost of his speed.

Special Operations.

Operations for Punctured Wounds of the Peritoneal Cavity.—Punctured wounds of the abdomen due to attempted suicide or homicide, Chinese surgery, and gores from the water buffaloes are relatively common. A few very remarkable cases have been recorded among which we give the following reported by Swan of Canton:

> "The case of a woman about thirty years of age who attempted suicide by introducing a long needle into the epigastric region was in some respects peculiar. The needle, two and a half inches in length, had evidently been introduced in the upper part of the epigastric region just below the ensiform cartilage. The head of the needle remained imbedded near the attachment of the rectus muscle the point having entered the stomach about midway along the smaller curvature. A small incision

was made into the rectus muscle and the head of the needle grasped with forceps and removed. The sharp extremity for a distance of one inch was heavily corroded, evidently by the action of gastric juices. The patient declared the needle had been introduced three months previous to the operation. Frequent attacks of pain in the epigastric region was all the patient complained of. A quick recovery followed without any subjective symptoms. It is remarkable that a needle of such a length should be retained in that position for any considerable length of time without causing serious disturbance."

An example of the second class of cases presented itself to us for treatment. A woman suffering from an extra-uterine gestation had been in the hands of a blind Chinese practitioner who had punctured the abdomen in numerous places with a long needle. Happily the needle had been heated in a flame before use and no damage to the bowel occurred, suppuration in the tumour had, however, resulted and an abscess had burst just below the umbilicus.

The general rule in all except the smallest punctured wounds and then only if the puncture has been made by a presumably clean instrument is to open the wound freely, suture any wounded bowel, wipe away with swabs any extruded matter, and then treat the case as one of peritonitis (see below).

Operations on the Stomach.—In this and the following operations to be described we have tried to avoid dealing with the general surgery of the abdominal cavity and to confine ourselves to the operations alone which will most frequently need to be performed by the surgeon in China. Operations on the bladder have been dealt with under stone and abdominal operations for gynecological and obstetrical purposes will be dealt with in the chapter devoted to those diseases.

Gastroenterostomy.—Cancer of the stomach is a relatively rare disease in China, but we meet with it from time to time. Dilatation of the stomach is fairly common and with carefully chosen cases the treatment by operation proves eminently satisfactory.

Neither of these diseases should be treated as a routine matter by surgical measures. Cancer of the stomach is rarely seen in that early stage where radical operation is possible. Gastroenterostomy is therefore the only operation which at present we are likely to be called on to perform. It should be kept for cases where the tumour is strictly confined to the pyloric region, where dilatation is present, where vomiting is a marked and very troublesome symptom, and where the patient is still in such a condition as to give reasonable expectation that the operation itself may be successful and life considerably prolonged. For dilatation of the stomach the operation should only be performed after prolonged medical treatment has failed to relieve the patient and vomiting is very frequent.

The operation should be preceded by careful washing out of the stomach for a day or two and the administration of only very easily absorbable food.

A vertical incision is made, 1 inch to the right of the middle line, about 6 inches long. The stomach is then carefully examined to make sure of the exact nature of the case. The small intestine is then taken up and slipped through the fingers till the first loop of the jejunum is reached. The operation may be done either by union of the jejunum with the anterior or posterior wall of the stomach; surgeons are divided in their opinion as to which is most desirable.

Anterior gastrojejunostomy is the easier operation and the one we adopt ourselves. The first coil of the jejunum is drawn out of the wound, emptied with the fingers, and clamped on each side with a pair of Lane's (or other) clamps. The stomach is now drawn out of the wound and the exact point for anastomosis decided on, as near the pyloric end of the greater curvature as possible. A large piece of the stomach, including the site of anastomosis, is clamped with a pair of Moynihan's clamps. It is not at all essential to clamp the stomach, but it has the advantage of controlling the bleeding and so making the operation simpler.

A point is chosen on the posterior wall of the jejunum, care being taken to leave no loop that can hang down on the proximal side of the intestinal incision, and stitched to the stomach just below the point where the opening will be made. The anastomosis is then accomplished as in lateral anastomosis of the bowel, under which heading a careful description of the details of the operation is given. The anastomosis should be slightly oblique, running from the right downward toward the left. When the anastomosis is finished the stomach and intestine are dropped back into the abdomen and the abdominal wall closed.

If the posterior operation be employed, the stomach is turned upward out of the wound with the transverse colon, an incision about 3 inches in length is made in the meso-colon and the portion of the stomach where the anastomosis is to be made is carefully drawn through the hole and clamped. The anastomosis is then proceeded with as before.

Operations on the Intestine. Lateral Anastomosis.—This is probably the commonest operation to be performed on the intestinal canal. It is indicated in most cases of obstruction of the gut from tumours, either with or without excision of the affected part, according to the nature of the tumour; in irreducible intussusception, and in some cases of strangulation or fæcal fistula.

The anastomosis may therefore be between two coils of small intestine, two coils of large intestine, or a coil of small and a coil of large intestine. The technique of the operation is the same in all cases.

We shall take as a typical example a case of irreducible intussusception. The anastomosis will in this case almost certainly be between a coil of large intestine and a coil of small intestine. The preliminary incision having been made according to the individual indications of the case, the two coils of intestine are withdrawn from the wound, emptied by running the fingers along them, and clamped at either side by two pairs of Lane's or any other intestinal clamps. Any other protruding bowel is returned into the abdominal cavity and the two coils of intestine carefully surrounded with hot pads or a temporary stitch may close the rest of the abdominal cavity. This is a point which should receive particular attention as two very important results follow from care as to this detail:

1. The operation is made entirely extra-abdominal and no chance of peritonitis is encountered.

2. Shock, which in abdominal operations is usually the result of exposure or handling of large bowel surfaces, is reduced to a minimum.

Two points are now chosen, one a little posterior to the anti-mesenteric border of the small intestine and one a little anterior to the anti-mesenteric border of the large intestine, and commencing here the two coils of bowel are stitched together along a line parallel to the length of the gut and about two inches long. The needle should pass through the peritoneal and muscular coats only of each coil. The suture completed, the thread should be left long. An incision is now made with a very sharp knife a full quarter of an inch away from the line of suture, in each coil of bowel. The cut should be about 1 1/2 inches long falling a full quarter of an inch short of each end of the line of suture. The intestinal coils are now wiped out clean with small swabs. Beginning at the point nearest the commencement of the first suture, a second continuous suture is introduced passing through all the walls of the intestine and thus uniting the cut edges of the gut throughout. Care must be taken in making this suture that the mucous wall is taken up with each stitch, it is very apt to fall away from the edge of the wound. Thus we now have the two incisions in the bowel wall completely united to each other and in addition a line of suture uniting the peritoneal and muscular coats a quarter of an inch below and reaching a quarter of an inch beyond the anastomosis already completed. The first suture is now taken up again and the outside union completed by continuing the first suture line across the ends and along the top of the already completed second line of suture, the distance of a full quarter of an inch from this inside suture line being preserved. The final result is therefore an inner suture of all the walls of the bowel all round the incision, and an outer suture of the peritoneal and muscular coat also all round the incision and a quarter of an inch away from the inner suture ring. Though not essential, it adds to the strength of the union to surround it with an omental graft, which means the finding of a suitable piece of the great omentum, trimming it if necessary and pulling it round the site of anastomosis, fixing it with one or two stitches. To prevent any danger of kinking we add a single suture uniting the two coils of bowel in the line of the incision one inch from either side of the anastomosis. The coils of bowel are now carefully cleansed and dropped back into the abdominal cavity.

We might deal at this point with the question of the **closure of the abdominal wound** in this and other abdominal operations.

Two methods of closure are commonly used, the simple method in which the whole thickness of the abdominal wall is united by one layer of sutures of silkworm gut passed through skin, muscular layer and peritoneum. This method has much to commend it. It is very speedy, accurate apposition is easily secured, and in most cases we believe there is little more danger of subsequent ventral hernia than in the more complicated methods. We employ it frequently ourselves and are well satisfied with the result. The commoner method is to close the wound by several layers of sutures for peritoneum, muscular layer, aponeurosis, and skin. The buried sutures should be of catgut, or fine silk or linen thread.

Many surgeons use this method in all cases. Where oblique or irregular incisions in the abdominal wall have been made, suture by layers should always be employed. On the other hand, where the incision has been made in the linea alba we believe that this method while much more tedious has no advantage whatever over the simple one.

Excision of the Bowel.—Excision of the bowel is required for all removable malignant tumours of the gut, for gangrene of the gut, for the closure of many cases of fæcal fistula, and for a few other rarer conditions.

The surgeon having determined exactly how much of the gut should be removed, Lane's clamps are applied to the bowel well beyond the site of excision and strong Doyen's or other clamps immediately within the area to be excised on each side. The bowel is then divided, and a V-shaped piece removed from the mesentery corresponding to but rather smaller than the length of the gut removed. All bleeding vessels in the mesentery are then ligatured. This is the first step of the operation. The second step is to close by rapid suture the two open ends of the cut bowel. This is most speedily accomplished by a single purse-string suture passing through all the walls of the gut, the suture being immediately tied tight. The ends are then inverted by a few Lembert sutures. The third step is to perform a lateral anastomosis of two pieces of bowel exactly as described above. The last step is to close the hole in the mesentery by a few fine sutures.

Appendicitis.—Little need be said on the subject of the surgical treatment of appendicitis in China. The disease is relatively very rare. Reports are to hand from many parts of China on the subject and all agree that the disease is very uncommon. It is probably a liberal estimate to state that there is not more than one case in two thousand hospital in-patients among the Chinese. The disease is, however, frequently seen among foreigners.

When it is actually met with among the Chinese, it is usually as a large abscess already pointing in the iliac region. We shall not therefore deal in detail with its surgical treatment in this book.

Appendicostomy.—While the ordinary operations on the appendix for inflammation are extremely rare in China, the operation of appendicostomy is one that will probably take its place as a well recognised operation for a certain limited number of cases. The operation of withdrawing the appendix through a small abdominal incision, fixing it to the abdominal wall and, by means of a catheter introduced through it, using its canal to wash out the large intestine has proved very successful in certain cases of chronic dysentery. For further details see Chapter VII.

Fæcal Fistula.—Fæcal fistula following hernia is almost unknown in lands where a surgeon can be secured at almost a moment's notice. In China it is relatively common though absolutely very rare; still there are few surgeons with a large practice who do not from time to time meet with such cases. The successful treatment of these patients is one of the most difficult problems that a surgeon has to meet. The patients are usually extremely weak, as a result first of the sloughing hernia, which led to the fistula, and second as the result of the lack of nourishment from the constant discharge of unabsorbed nutrient material from the small intestine. They are seldom in a condition to stand a severe operation. Let it be acknowledged at once that the ideal operation is excision of the coil of bowel implicated. Such operations have been successfully performed from time to time by surgeons in China. We have not ourselves met with a patient who in our opinion would be likely to survive the operation.

The treatment we incline to is anastomosis of the afferent and efferent bowel above the hernial protrusion. But it must be clearly understood that this is only a preliminary palliative operation, not a cure. For a time the intestinal contents pass almost wholly through the newly provided channel, but later again a good deal begins to pass through the old opening, and further operative measures are required. We shall illustrate the treatment we suggest by a case lately in our hospital.

A Chinese woman, aged thirty-seven, came to the hospital suffering from a femoral hernia which had sloughed. All the contents of the small intestine were discharging through the wound and the patient was in a terribly weak condition. In the absence of the writer, the surgeon in charge opened the abdomen above the hernia and performed a lateral anastomosis as suggested above. The patient recovered and for a time everything went well, only the minutest quantity of intestinal contents escaping through the wound. After a time, however, this amount began steadily to increase, the majority of the contents of the intestine escaping again by the fistula, and the woman finally returning in great distress with a considerable prolapse of the intestinal mucosa through the wound. We opened the abdomen again, at the same spot, and found the anastomosis in every way satisfactory. We therefore cut off the ends of the afferent and efferent hernial coil close to the anastomotic opening and stitched up the proximal ends of the cut intestine, thus completely restoring the intestinal canal. Purse-string sutures were then run through the open end of the distal coils of intestine and pulled tight to prevent escape of bowel contents. One end of each suture was left long and threaded on a probe which was passed through the lumen of the gut till the sutures could be secured at the fistulous opening. By pulling on the sutures the ends of the gut were invaginated and the whole coil brought outside the fistulous opening; the mesentery was seized with forceps and the whole mass cut off, the vessels being subsequently secured and the pedicle of mesentery stitched in the wound. The whole of the implicated gut was thus removed extra-abdominally. The patient made a most excellent and complete recovery.

While we would recommend primary excision of the implicated coil of gut where the patient's strength would stand such an operation, we would in all other cases recommend a two-stage operation such as that given above.

Hernia.—For the following advice on the operation for the radical cure of hernia among the Chinese we are indebted to our co-author.

Hernia –Its Special Aspects and Treatment.

Hernia is an extremely common affection among the Chinese, both among the labouring classes as well as among those of more sedentary occupation.

"Hernia is more common in China among men than in probably any other country."—*Dudgeon, Peking.*

Among the former, owing to the strains and stresses incident to their life; among the latter, owing to the muscular atony and degeneration brought about by theirs.

"The climate also exercises considerable influence in producing weakness of the abdominal tissues."

"Hernia.—It is often met with—the causes being much the same as at home." —*Main*, 1907.

The labouring classes of China are a hardy, rugged, strenuous lot, the life of many being more like that of beasts of burden than of men—carriers of heavy loads, rowers of heavy boats, drawers of heavy carts, and so on. One has but to look into the face of a wheelbarrow coolie trying to start his barrow laden with eight to ten passengers, or up hill with a large load of bricks; and notice his congested face and tense, straining muscles, to realise the amount of abdominal pressure that must be brought to bear before he gets under way. This is but a type of the kind of strain the coolie class is daily subjected to.

In direct contrast to the labouring man is the clerk, the teacher, the well-to-do Chinese of almost any scholarly or clerical occupation—including the wife and all the female relations of the same. The most violent exercise of these consists of a stroll up the street, at a leisurely pace. Sports are unnatural, and acquired. Energetic movements are rare and unprepared for. The muscles are insufficiently developed, fat predominates, or an atonic relaxation, both of which conditions are conducive to the formation of hernia.

All types of hernia are found in both men and women. In men, inguinal and inguino-scrotal predominate, the latter being in excess because no early treatment of the former is instituted. Umbilical and femoral are occasionally found in men, the former usually associated with ascites, the latter usually of rapid onset and immediate strangulation. Among women by far the commonest form of hernia is ventral between the recti. It is usually umbilical, but often due to multiple labour with separation of the rectus muscles. As in so many other surgical conditions among the Chinese, the average of herniæ is large and overgrown. When not so, the patient is almost invariably young, or the hernia has appeared very recently.

It is almost true that no treatment is resorted to by the Chinese themselves for this condition. But as the Chinese baby wears a tight and fairly well-fitting abdominal binder (usually outside the clothes, but firm and even in its pressure for all that), and wears this for several years, we may attribute to this fact possibly the limited number of infantile umbilical herniæ met with in later life.

In dealing with the subject under discussion, **the special aspects**

of hernia and its treatment in China, we shall do so under the following headings:

a. The choice of operation upon inguinal hernia, and its after-care.

b. Operation upon large inguinal hernia; its advisability and method.

c. Strangulated hernia, early stage, late stage.

d. Treatment of the cord and closure of the hernial sac in operations for the cure of infantile hernia.

e. Operative treatment of large umbilical and abdominal herniæ.

a. **The choice of operation upon inguinal hernia,** and its after-care.

There is no difficulty whatever about obtaining consent to the operation for inguinal hernia in Shanghai. It is not regarded by the Chinese as an abdominal operation, but is supposed to be extra-abdominal. The condition is to the working man a serious impediment to his gaining a livelihood, and to the well-to-do, because so frequently large and cumbersome, a source of great discomfort.

"A few submit to the radical cure but most prefer to jog along with a truss rather than submit to an operation."—Main, Hangchow, 1907.

In China, Bassini's, when applicable, is the favourite operation among surgeons, and into the technic of this it is hardly worth our while to go.

"Halsted's method, in many points similar to Bassini's had been briefly described in the first number of the *Bulletin of the Johns Hopkins Hospital*, 1889, although Bassini's had been published in an earlier paper read before the Italian Surgical Society, 1888.

The two methods differed, however, in several important points: In Halsted's method the cord is transplanted more externally so that it lies just beneath the skin and superficial fascia, whereas in Bassini's operation the cord is covered by the aponeurosis of the external oblique as well as the skin and fascia. The most important difference, however, is that in the Halsted method the internal oblique muscle is cut upward from one to two inches before it is sutured to Poupart's ligament. The results of operation have shown this step to be entirely unnecessary. In many cases, we believe, the cutting of the internal oblique greatly increases the chances of recurrence and weakens the very structure we must rely most on for radical cure. Another point of difference is the resection of all but one or two veins of the cord. Here again the results of the method, showing atrophy of the testicle in a considerable proportion of the cases, have proven its disadvantage.

The principles of Bassini's method are easy of understanding and simple of performance. The first and most important principle consists in the cutting high up of the external oblique aponeurosis, thus giving free access to the internal ring, thereby making it possible to completely remove the sac well beyond the neck, thus obliterating entirely any funicular process. Second, suturing the internal oblique muscle to the shelving process of Poupart's ligament. Third, and least important, as results have shown, is that of transplanting the cord to a higher position than normal, by suturing the internal oblique muscle underneath the cord instead of over it, then covering the cord with the aponeurosis of the external oblique and, lastly, with the subcutaneous fascia and skin.

That only the first two steps are the essential ones to success is shown by the fact that the last step may be dispensed with with almost equally good results. "Suture of the canal without the transplantation of the cord," the other steps being the same as in Bassini's operation, is now regarded by many surgeons as superior to the original or typical Bassini method."—*Two Thousand Operations for the Radical Cure of Hernia, Bull and Coley, N. Y. Abstract, Journal A. M. A., September* 21, 1907.

But certain points, as the result of personal experience, may be worth noting, which will tend materially to satisfaction and success. The factors which enter most conspicuously into bringing about real success in hernia operation are, first, thorough understanding of the particular operation; absolute sterilisation of the skin; the use of rubber gloves; the very dainty handling of all tissues; the assured finding of the sac before attempting to isolate it; the careful placing of the deep sutures so that while giving support they embrace the minimum of tissue and, while firmly tied, yet do not strangulate the surrounding tissues. Chromicised gut and kangaroo tendon are the **only legitimate materials** for this use.

"Speaking of sutures, the authors state that the selection of proper material is, in their opinion, an important element in the technic of operations for the radical cure of hernia. They have so frequently in earlier papers pointed out the disadvantage of non-absorbable sutures, that it seems unnecessary to more than refer to the matter here. That non-absorbable sutures, in a certain number of cases, cause slowly-healing sinuses, which greatly enhance the chances of relapse, is a fact that has been confirmed by upward of thirty personal observations. In some of these cases sinuses have developed nearly four years after the introduction of the sutures.

Non-absorbable sutures were first used in operations for hernia, because at that time there were no methods known, by means of which absorbable sutures could be perfectly sterilised. Now that catgut and tendon may not only be absolutely sterilised, but chromicised so as to remain unabsorbed for any desired period of time, we believe there is no reason for any longer continuing the use of non-absorbable sutures. In the series of cases which forms the basis of the present report, with the exception of half a dozen of the earlier cases, kangaroo tendon, chromicised so as to remain unabsorbed for from three to four weeks, has been the suture material uniformly employed. Non-chromicised catgut was used for the ligatures of the arteries and, in the great majority of cases, for closing the external wound."—*W. T. Bull and W. B. Coley, N. Y. Abstract, Journal A. M. A., September* 21, 1907.

William B. Coley of New York places one suture above the cord and it is an excellent practice because it allows the cord to come out in a normal position and not around a curve. Our own custom is to ligate the sac as high as possible, leaving the ends of the ligature long and using these for the first stitch, placing it above the cord. The cord comes out directly beneath it; otherwise the Bassini is according to rule.

In performing the particularly satisfactory operation upon infants, it is good practice to take no stitches in the ring, but merely to remove the sac as completely and as high up as possible. This procedure merely reduces the child's condition to the state of nature, whereas the operation upon adults impairs for all time the proper action of the muscles.

A certain large proportion of inguinal herniæ in China are direct, and in many others the canal is so old and so dilated that it has lost its original character, and appears as an indurated ring at the position of the external ring, the whole looking directly into the abdominal cavity. In these cases the ordinary Bassini hardly applies and a very simple method of treatment, practised for years by Duncan Reid in Shanghai, is to allow the cord to come out at the lower angle of, shall we say the external ring, or, better, the canal, and close everything above it, being careful not to strangulate it by over-zealousness. This is practically Barker's operation except that the sac is here removed. Barker ligated but left it. Attempts at more elaborate treatment will give no better results, will require more handling of the tissues, and will frequently endanger the deep epigastric artery. In this operation the conjoined tendon is stitched directly to Poupart's ligament. Silkworm gut may be used for the skin, again not too tightly tied, and in cases where much handling is required or oozing is anticipated, a small gauze drain in the lower angle of the wound and a firm pad at the fold of the groin. It is a very good rule to use rubber macintosh over the dressing, making a small hole for the penis and thus to prevent the dribbling of urine on the dressing, as the Chinese are careless about the matter. Attempts to keep the average Chinese patient flat for more than a very few days will prove futile; therefore little reliance may be placed on such hopes. Excellent results, however, may be anticipated, and it is rare, in our experience, to have reports of recrudescence, always supposing that the wound heals properly without stitch abscess.

Halsted's operation we have used, but it requires even better nursing than Bassini's and is not therefore so satisfactory in China.

b. **Operation upon large inguinal hernia;** its advisability and method.

So much for inguinal herniæ of ordinary size. But in China one is constantly facing the question of the advisability of operation for herniæ of **exaggerated size** and **long duration.** Both these factors affect the conditions and advisability of operation very materially, the large size by reason of its greater seriousness, owing to the greater age of the patient on the average, the weaker condition of the same, and the likelihood that it will be associated with a cough—this cough being part of a vicious circle and due to a chronic bronchitis, very often tubercular but not invariably so. The length of the duration of the hernia affects the question by the fact that tissue changes take place in these old tumours: the mesentery becomes permanently elongated and thickened, there is very apt to be a descent of abdominal organs into the sac, and far more serious yet, there takes place a diminution of the calibre of the abdominal space by muscular contraction and fixation rendering it next to impossible to reduce the entire large hernial contents into the abdominal cavity, or, when so reduced, producing so much pressure that closure and retention at the hernial ring becomes difficult or impossible. There is hardly any surgical condition more embarrassing than having opened up a large hernia to find it impossible to retain the contents thereof in the abdomen while proceeding with the operation.

In the first place, in operating upon these large herniæ, the general condition of the patient must be carefully considered—age, occupation, condition of heart and lungs and kidneys, the advantages pro and con, the possibility of keeping the patient at rest for a number of weeks perhaps. These must all be weighed against the advisability of leaving bad enough alone. The local condition also must be considered in the following respects: the tone of the muscles, the possibility of complete reduction without excessive pressure, and the probable contents of the sac. This sounds easy enough as so stated, but in practice is by no means so. In the first place these herniæ are often irreducible, or at least partially irreducible, owing to adhesions from old inflammatory reaction: not infrequently from Chinese needling, or from local peritonitis from any cause. If one has reason to believe that the hernia is reducible after separation of adhesions and so on, and that the abdomen will contain it, then if the patient's condition will warrant the operation and no chronic cough be present, there is almost no limit to the size of an inguinal hernia which one may fearlessly tackle. Mere size does not militate against the procedure nor even against the possibility of a very good and permanent result. These herniæ are the easiest of all in many cases, as far as mere operative technic goes. When in doubt of the contents of the hernial sac, where other conditions favour operation, there is no possible objection to an exploratory "look-see." In fat persons even the probability of being unable to reduce the contents of the sac into the abdomen would not forbid this procedure, as in more than one instance we have explored, thinking it likely that a large amount of fatty omentum would prove to occupy the sac which when removed would render reduction possible. In these cases one is guided by the general adipose condition of the patient together with the percussion sound of the tumour and also the feel of the contents. In such, if the tumour appeared to be all intestinal, the exploration might not be warranted, whereas if omentum were largely in evidence the operation might be most successfully performed.

With regard to the **technic.** A moderate Trendelenburg elevation is of material assistance. After careful dissection and reduction the sac is usually found to be much thickened and to require considerable effort for its isolation and removal. These cases are among the number in which the typical Bassini is not usually practicable, and being frequently associated with chronic orchitis and usually found in older patients, a castration is often warranted and complete closure of the abdominal opening permissible. A binder and firm support must be worn for a long time by the patient.

A typical case of these large herniæ is reported by Gossard and Baldwin (Taianfu, Shantung). The weight of the patient was about 130 pounds. The doctors note a slight bronchitis and a very large tumour of the scrotum. We would ourselves reëmphasize this association of bronchitis with large herniæ, as we believe it to be, if not the cause of the herniæ, a certainly determining factor in their very large size. The scrotal mass was larger than a man's head; the neck immensely thickened, opaque, transmitting light, the upper part was tympanitic, the lower part dull on percussion and gave water fluctuation. The right inguinal canal was large and at the external ring there was an impulse on coughing. The lower part of the tumour was tapped and 700 c.c. of water drawn off. This reduced the tumour slightly but the effect was ephemeral. The cough was treated for a short time with success. At operation 1,000 c.c. of fluid was withdrawn before incision. The sac was very much thickened; the transverse colon covered by the great omentum came first into view. It was necessary to enlarge the inguinal canal to replace the viscera. The great omentum, ascending colon, cæcum and appendix and the entire ileum with its mesentery were found in the sac. The appendix was thickened and contained fæcal concretions. It was emptied but was not removed. The right testicle was six inches in circumference (note this particularly) and was removed, simplifying the operation. Closure was by imbrication and No. 2 chromicised catgut used. The scrotum was amputated. The cough returned after operation (this is to be expected) and there was slight suppuration in the wound due to colon bacillus. At least temporary success was attained.

CASE.—Double congenital hernia of both sides, which had reached an immense size, extending down below his knees, and was of great inconvenience to the man, who was a street vender. The right side was first operated upon. Barker's operation was done. The recovery was slow, but fairly good. The left side was soon after operated upon; the same operation being done. In about one year a small hernia again appeared on the right side, and he came back for a third operation.

This time we removed the testicle, and the man made a rapid recovery, which has remained permanent to this day. As a result of the operation he has sent other patients. —*McCartney, Chungking.*

We quote this case with pleasure as it bears out so accurately our own experience. The reporters are to be congratulated on their careful observation and notes.

c. **Strangulated Hernia; Early State.**—Where hernia is common, frequent strangulation may be expected. In our Shanghai experience we have noticed with satisfaction that the great pain and other alarming sensations produced by strangulation usually result in a prompt presentation of the patient for treatment. We remember one patient who although dwelling at a distance was relieved by operation within an hour of strangulation and we usually get these cases before much damage is done. This, however, is not the experience of most surgeons in China, in whose minds strangulated hernia calls up a picture of gangrenous bowel and fæcal fistula.

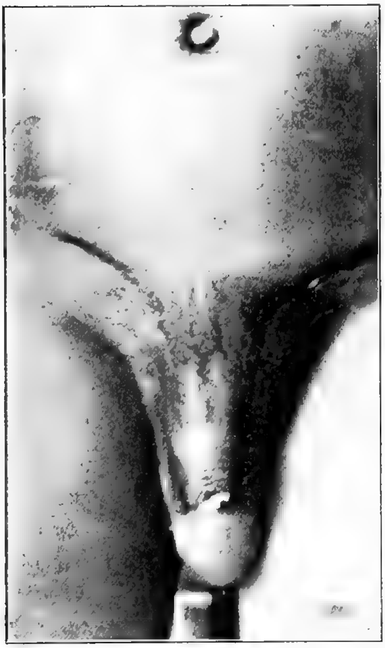

Fig. 149.—Double radical cure for large double strangulated hernia, not synchronous. As both testicles were diseased castration was performed on each side. *(By Jefferys.)*

In our experience there is nothing very peculiar in the early strangulated herniæ of China. They are according to rule. The majority of them occur in small herniæ with tight canals, and are the result of pressure or bruising, and occasionally of enteritis or dysentery. It so happens that we have not yet lost a case of strangulated hernia, but this is merely owing to good luck. The most interesting in our practice was in a man who presented himself for double entropion. He also had bronchitis, which proved to be tubercular. After staying in hospital for some time he revealed the fact that he had chronic orchitis on both sides, each testicle being enormously enlarged, and an inguinal hernia on each side, the whole scrotal mass being about the size of a cocoanut. After successful treatment for the entropion he insisted on operation for the herniæ. It was refused on account of his tuberculosis, and a well-fitting double truss applied. Unfortunately one hernia came down at night while the truss was still on and before morning there were active symptoms of strangulation. We were compelled to operate and did a one-sided castration at that time. But before the patient left hospital the other side went wrong, strangulated, and operation was again performed with castration. If it had not been for the cough and tuberculosis there is every reason to suppose that both of these would have remained successful. Within two years the patient died of his lung trouble and there was a slight recurrence of each hernia, a bubonocele brought on by the coughing which was hard and persistent.

Lee of Wusih reports a case of strangulated femoral hernia in a man. Operation was successful and a radical cure obtained.

We would repeat the old warning that in all cases of strangulated hernia, before reduction is attempted, a very careful inspection of the contents of the sac should be made. An anomalous case of hernia occurred in our practice some years ago. A man presented himself with symptoms of an inflamed hernia, and as there was some œdema and infection of the scrotal wall a misdirected attempt was made on our part to quiet the thing down by rest and local measures. Symptoms of peritonitis, however, developed and a tardy operation was performed, which revealed a sac full of pus but without other contents. It seemed to be shut off from the abdominal cavity. We never quite satisfied ourselves as to the pathology of the condition, whether an inflamed hernia reduced itself, carrying infection with it, or whether inflammation took place in an empty sac, or possibly a hydrocele. In any case, we acknowledge fault in delaying operation.

The common experience of surgeons in China is to see their strangulated herniæ **in an advanced stage,** necessitating resection of the gut or even the treatment of sequential fæcal fistula, these fæcal fistulæ being nature's attempt at cure.

d. **Treatment of the cord and closure of the hernial sac in operations for the cure of infantile hernia.**

It has struck us that undescended or maldescended testis associated with inguinal hernia is peculiarly common in China, and infantile hernia also so. The treatment of the former condition is a so many-sided question that we do not feel warranted in taking it up, especially as the larger systems of surgery cover the points thoroughly. The authority on the subject is William B. Coley, of New York, and his paper, "The Treatment of the Undescended or Maldescended Testis Associated with Inguinal Hernia" (*Annals of Surgery*, September, 1908) is well worth a careful reading, as well as his chapters in Keen's System of Surgery. We have ourselves found the treatment of the condition and the closure of the hernial sac in operations for the radical cure of infantile hernia, with or without maldescent of the testis, one of the very most difficult in this whole field of work, far more taxing to our ingenuity than mere strangulation or intestinal resection, and yet it is a condition which anyone is liable to meet with unexpectedly if in the hernia business at all. And to the novice there is perhaps no condition in surgery which is more difficult of proper treatment than infantile hernia. The proposition of handling the cord without injury to the testicle and closure of the neck of the sac in infantile hernia is one of extreme difficulty and one upon which too little has been written by those who have given their life to the important subject of the radical cure of inguinal hernia. It is perhaps sufficiently taxing to the average general practitoner to do a Bassini or a Halsted neatly and without laceration, and obtain a satisfactory cure; and the anatomy and technic of the operation is by no means a simple one. But when, in inspecting an acquired hernia, the surgeon finds that the cord is not without, but within the sac; and the testicle likewise so; and both, as it were, a part of the sac and yet extraperitoneal; and the cord not a cord but an expanded surface in which the vessels, nerves, and vas are spread out to a width of perhaps 2 inches beneath the peritoneum; and where, if one could isolate these tissues without laceration thereof (which one cannot) one would have opened the sac in such a way that to merely ligate that which was not part of the cord would be not to close the neck of the sac at all—then a condition is presented which, unless one is prepared to meet it in some definite way, would bring the operation to a standstill owing to inability to complete the same.

In this we speak from experience, and confess frankly that such were the conditions under which we first operated for infantile hernia. The case was as follows:

A double inguinal hernia, in a young man, with a history of many years' duration of the same. There was only, apparently, a right testicle —the left could not be palpated. We began on the right side, having in mind the usual acquired hernia. We found the cord widely spread out over the inner surface of the sac and the testicle practically within the sac. We tried to dissect out the cord, and failed completely. We finally cut along each edge of the expanded cord and so completely opened the sac. We then ligated what was left and removed it. There was then no possibility of closing the sac and we merely laid the expanded surface at the lower angle of the external ring and closed the external ring with sutures down to the point where further closure would have strangulated the vessels and vas; so leaving the peritoneum open at the ring. On the left side, after dissecting out the scrotal sac of the hernia, we found the sac extended upon the abdominal wall and contained a flattened-out, atrophied testicle, when, for the total lack of knowledge as to how to proceed, placing a double ligature around the sac and cord, we removed the whole *en masse*, doing a one-sided castration. At this point in the operation a profuse hæmorrhage took place from under the bladder, proceeding, as we found, from the right side, which we had to open again to find that in attempting to dissect out the cord on that side we had torn the spermatic artery which had slipped into the pelvis. It was extremely difficult to catch and ligate; and, the patient completely collapsing, we had to simply pack gauze over each external ring and abandon the operation at that point. The further history of the case involved a pelvic peritonitis, a fæcal fistula, considerable irritation of the bladder, congestion of the right testicle (from injury of the veins we suppose), and at the end of several months a final closure of the wound with considerable scarring —a result which was anything but a source of pride to the surgeon and anything but a satisfaction to the patient.

CASE.—Boy eighteen years old, with double congenital hernia. We first operated upon the left side. Barker's operation was done, but after the wound was closed an extravasation of blood into the scrotal tissue occurred, followed by infection. The wound was opened and the testicle was removed, after which he made a rapid recovery. As he would not consent to another operation, fearing he would lose the other testicle, we fitted him with a truss, which came near being his death a year after. Through a careless application of the truss the hernia became strangulated and remained so for two days. When he came to us we feared that nothing short of an operation would be of any use, as the hernia had been strangulated for so long a time, and we had fear that the gut might be gangrenous. He was chloroformed, and taxis was performed, which, contrary to our expectations, was successful in a very short time. After a few days' stay in the hospital the patient returned home, and up to the present time we have heard or seen nothing of him. –*McCartney, Chungking*.

As a natural result of this experience we have given much time and study to the subject and have had the very great satisfaction of meeting the condition in after years with a consciousness that we can now handle it with satisfaction both to ourselves and to the patient; according to the following method, which we believe to be by far the most satisfactory procedure possible under the circumstances and thoroughly sound from the surgical standpoint.

The incision is made down to the sac, which is very carefully isolated. The testicle is drawn up out of the scrotum but not detached, and the vas with its accompanying nutritive structures located by incising the sac in a straight line in the axis of the cord. This cannot usually be done without opening the sac and seeing with one's eyes exactly where the structures lie. A broad longitudinal band averaging 2 inches in width is cut with a straight scissors from the testicle to the internal ring, including all the structures of the cord. At the angle where one of the two incisions ends, at the internal ring, a chromicised gut-threaded needle is inserted from the outside, passed in front of the band which includes the cord, and, taking small stitches in it at one or two points, brought out at the corresponding angle of the incision on the opposite side, and then the two ends of this stitch are wrapped around the portion of the sac which does not contain the cord and firmly ligated at the internal ring. The portion of the sac included in this ligature is then amputated and the two ends of the ligature left long, to be used afterward as the first stitch to close the rings. An exactly similar stitch is placed at the lower (testicular) end of the band and this makes the new tunica vaginalis. The band containing the cord naturally puckers itself laterally, or folds itself into a structure which resembles the ordinary cord and may be treated exactly as in the Bassini operation. The testicle

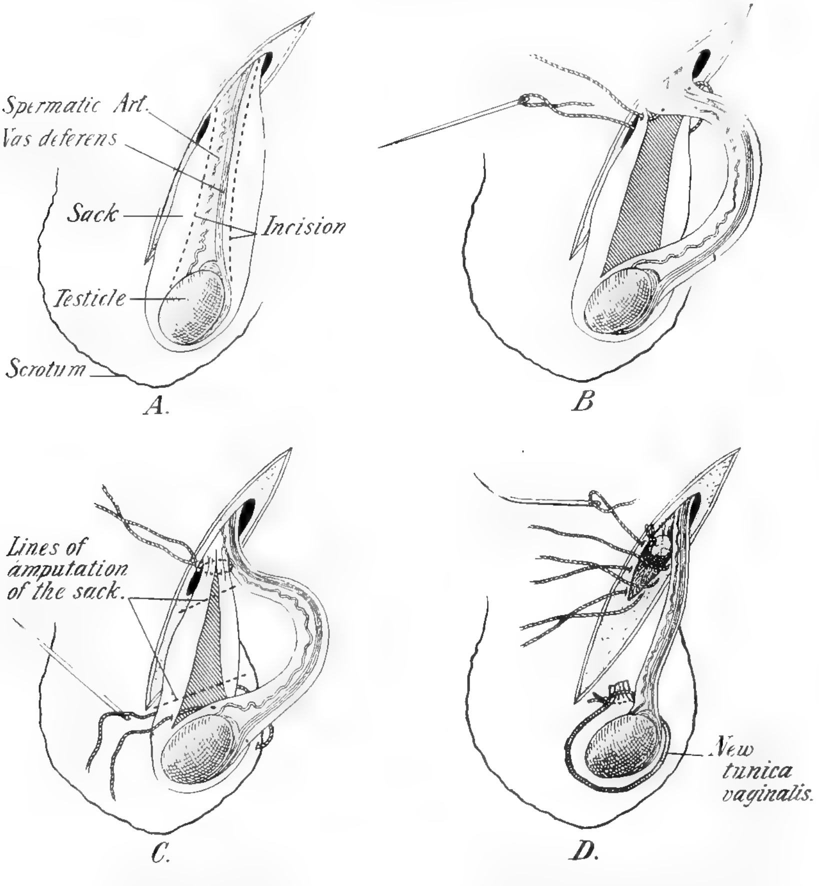

FIG. 150.—Author's treatment of the cord and closure of the sac in operation for the radical of infantile hernia. *A*, Lines of incision for making the cord; *B*, the placing of the closure stitch; *C*, the closure stitch tied and the stitch for repairing the tunica vaginalis placed; *D*, both stitches tied and the cord formed. (*By Jefferys.*)

is then replaced in the scrotum, from which it has never been separated, but merely turned out, as it were; the upper strand of the ligating stitch is placed in the upper edge of the ring, and the lower in Poupart's ligament sufficiently beneath the upper angle of the ring to allow circulation to the testicle. The remaining portion of the ring below this stitch is closed with three or four chromicised gut ligatures, the cord laid upon these stitches, the fascia sewed over the cord, and the skin over that. The final result is a Bassini in which, though the neck of the sac is not absolutely closed, it is practically so, to all intents and purposes, as one could not get more than a probe through the space between the first ligature and the new-formed cord. In every respect besides that of the manufacture of the cord and the placing of the first stitch, the operation is in its doing exactly according to the procedure in acquired hernia.

The points that we would emphasize are:

a. That no slightest effort should be made to dissect out the cord in infantile hernia; that it should be acknowledged as impossible and its structures merely included in a broad band as a whole.

b. The careful placing of the stitch which is to have the three-fold use of closing the neck of the sac, folding up the band which is to be the cord, and acting as the first stitch to close the rings.

c. The puckering of the band and treatment of it as the cord is treated in the ordinary Bassini.

d. The manufacture of a new tunica vaginalis by withdrawing the testicle from the scrotum and purse-stringing the lower sufficient portion of the sac of the hernia.

e. **Operative treatment of large umbilical and abdominal herniæ.**

The last important form to which we shall refer is the large abdominal hernia, umbilical or ventral. These are reported from all over China, and are usually in women and associated with labour. They are most commonly between the recti, next umbilical, and after that lateral, in the linea semilunaris, and so on. These vary in size from a walnut to a water pail, the latter variety containing most of the abdominal contents. These large herniæ become pendulous, the coverings are thin and prone to ulceration, and the contents in constant danger of strangulation by twisting and by their own weight. In many umbilical and ventral herniæ there will be found ascites present in the abdomen which will affect the prognosis and the question of operation very positively, especially if it is of so great an extent as to make pressure on the wound before it has had time to heal. Betow and Draper (Singiu, Fukien) report ventral hernia 3 inches to the right of the umbilicus caused by native doctors using needles piercing the abdominal wall, causing sloughing and local gangrene and consequent weakening of the abdominal muscles and fascia. In this case the sac was the size of a child's head, and its contents easily reduced as the ring was 3 inches in diameter. Wells of Pyongyang (Korea) reports "an enormous umbilical hernia as big as two hats." Operation was not performed in this case.

With regard to the treatment of these cases. In the aged many are best treated by a well-fitting abdominal supporter consisting, if irriducible, merely of a firm sling: if reducible, of a padded concave hard-rubber plate which extends beyond the margin of the ring and is held in place by a canvas or cellular band with straps. Only those cases are rightly operable where the age and health of the patient will admit and the hernia is reducible as to size, that is, where we are sure that the abdomen will contain the contents of the hernia without undue pressure.

With regard to the methods of operating, they are simple enough. The sac is dissected out, the hernia reduced, the neck of the sac ligated with the utmost assurance of not including any portion of its contents. According to its size, the ring may be either directly drawn together with interrupted sutures of chromicised gut or, when large with sharp edges, it is better to split the ring, even into the muscle, in order to bring wider and fresher surfaces together. Booth of Hankow (*C. M. J.*, March, 1909) describes the filigree implantation method in abdominal herniæ previously considered inoperable. His paper is worthy of a careful perusal. In abdominal herniæ with extensive areas of protrusion it is perhaps the only method by which success can be attained. It is especially applicable to those cases where after operation considerable fascial sloughing with atrophy of the muscle has resulted in extensive abdominal herniation. The method involves the use of silver wire No. 28 gauge with eight loops to the inch, laid if possible next to the peritoneum, and the wound closed as described by McGavin in the *Lancet* for November 23, 1907, with Mitchel's clips and stout salmon gut sutures. The method is not an easy one of application, and is rarely necessary except in wound herniæ where tissue is actually lost.

—*W. H. J.*

Operations for the Relief of Ascites.—Ascites associated with cirrhosis of the liver and enlargement of the spleen is very common in some parts of China and Formosa. See Chapter XII.

Temporary relief may be obtained by paracentesis, but in the majority of cases the need for this recurs with increasing frequency, and eventually leads to a fatal termination.

To evert this, operations may be performed with two ideas in view.

1. To establish an extra-hepatic circulation.

2. To preserve for the use of the body the enormous quantity of fluid transudate.

The typical operation from the first point of view is the Talma-Morrison operation for the establishment of vascular adhesions between the liver and the abdominal wall and the omentum and the abdominal wall. The complete operation is a severe one, usually too severe for the debilitated patients. A small operation of considerable value in a very small number of cases and without any risk to life is to open the abdomen, separate the peritoneum widely from the abdominal wall and insert the omentum in the diverticula so made, holding it in position with temporary sutures. In a very few cases in our hands this operation has proved satisfactory. In the majority it has proved of little benefit even temporarily. We must, therefore, consider the question of filtering the fluid off into the other tissues of the body. This is an absolutely new operation and we can give no opinion as to its permanent value. To Sampson Handley we owe its inception. His first experiments were by drainage of the abdomen through the femoral canal into the tissues of the thigh. It would seem that the easiest way to do this is by tapping the abdomen with a curved trocar. Introducing through the cannula after the trocar is withdrawn a blunt seeker which just fits the cannula, with the end of this finding the femoral canal and causing it to bulge in the thigh where it is reached by a flap incision with the convexity outward. The bulging peritoneum is caught with forceps freely incised and stitched on each side to Poupart's ligament. Into the hole may be introduced a decalcified bone tube. Some of Sampson Handley's cases were marvellously successful, but several failed from blockage of the opening. As an alternative method, therefore, the attempt was made to form new lymphatic channels by carrying numerous strands of silk from the peritoneal cavity beneath the outer end of Poupart's ligament and down into the thigh. In the case recorded the operation seems to have proved very satisfactory, though it was some time before drainage was efficiently carried on. These operations or some modifications of them well deserve a careful trial.

After-treatment of Abdominal Cases.—The after-treatment of abdominal cases is always an important point, though at times this has been greatly exaggerated. Our own opinion, after large experience of abdominal surgery among the Chinese, is that a considerable number of such cases at home suffer from overnursing. The average abdominal case does not require to be kept lying on its back in bed, on a starvation diet and a limited water supply. Indeed we believe that such treatment is absolutely harmful. Except in specially severe cases free movement from side to side and a plentiful supply of water to quench the thirst is a great advantage to a patient after an abdominal operation, always supposing that a free supply of water does not promote vomiting; and we believe that only in exceptional cases does this occur. We have never seen a case of parotitis after an abdominal operation in a Chinese, we have seen more than one in a far smaller number of cases at home in England and we attribute the difference to the free supply of fluid.

The routine treatment that we advocate in an average case of abdominal surgery is that, as soon as the patient wishes it, small quantities of very hot water are given him to drink, and if this does not cause vomiting no restriction is put on the amount of fluid taken. Usually the patient is better without any actual food for the first twelve hours; after that, milk, beef-tea, etc., for forty-eight hours, and then a gradual resumption of normal diet. If the bowel itself has been opened the fluid diet should be continued for twenty-four hours longer than in a simple case. Nutrient enemata are as a rule quite uncalled for. If the bowels have not been moved, half an ounce of castor oil should be given on the third day. If distention occurs it is best met with a hypodermic injection of physostigmine salicylate 1/50 grain which can be repeated if necessary. This drug has not the reputation among surgeons that it most richly deserves. The question of the use of opium in any of its forms is an important point. The habitual use of opium in abdominal cases is greatly to be condemned, but so is the refusal to use the drug under almost any circumstances. The rule is to avoid the drug and its alkaloids as far as possible, but there is nothing more weakening to a patient than the chronic pain which prevents sleep, and there is no drug which meets this so successfully. If given it is best administered as a hypodermic of morphia of not more than 1/8 grain. Less than this is often all that is needed.

Except in the rare cases where drainage is required the wound should be left untouched for from eight to ten days. Outside bandages may be adjusted as required, but the dressings near the wound should not need to be touched. The stitches should be removed on the tenth day. We allow our patients to sit up after the tenth day, and to rise to their feet on the fourteenth day unless otherwise indicated. After the second or third day there is no objection except in special cases to the patient kneeling up to pass her water, but she must be assisted to do so. We know that these dates are very considerably earlier than those usually given at home for rising to the upright position, but we are satisfied that not only does no harm come from this, but it is actually good for the patient.

The treatment of cases suffering from peritonitis deserves a few special remarks. These cases will usually be the result of perforation either from the outside of the body or from the inside of the bowel; very rarely from an abscess bursting into the peritoneal cavity. In cases of perforation from within the bowel it is absolutely essential to close the perforation at once. Many of the patients that are brought to us are moribund before they arrive. It is inadvisable and useless to have anything to do with such cases. Others are the result of perforation of a typhoid ulcer and, if seen at once, such patients may be dealt with; others again are the result of perforation of a dysenteric ulcer, but in our experience these dysenteric cases are always brought too late.

In internal perforation it is essential to consider the cause, as this may give great assistance in reaching the perforation. Thus an incision low down in the right semilunar line reaches the lower end of the ileum without any difficulty and the typhoid ulcer may usually be reached with very little handling of the bowel, a very important point. Operation must be rapid, the hole in the gut closed by a few Lembert sutures, and no great time occupied in sponging out the septic material in the pelvis.

Under no circumstances whatever should irrigation of the peritoneal cavity be undertaken. It only diffuses the septic material over areas not yet infected.

In perforation from the outside, as for example from gores by buffaloes, it is essential that the wound be carefully enlarged, perforated gut searched for and dealt with, and any foreign matter introduced at the time of the accident removed. A difficult question here arises. It is frequently found in such operations on the Chinese that the small intestine contains round worms, often is full of them. We consider this to be a very serious complication. While we doubt the possibility of a round worm perforating uninjured gut it is certainly true that such a parasite can bore its way between stitches however well placed. A few worms may be removed with forceps from the gut, but where the intestine is full of these parasites we believe that it will be found safer for the patient to establish the smallest possible fæcal fistula, closing it by a trivial subsequent operation after the worms have been removed by medicinal treatment. In all cases of peritonitis the peritoneum should be drained after operation by good sized rubber tubes placed in the pelvis, the loins, or elsewhere, as needed. The patient after operation should be well raised in bed to prevent any infection spreading to the specially dangerous sub-diaphragmatic region, and continuous enemata of hot water given from a vessel just raised above the level of the bed. The water should be allowed to flow in, drop by drop; large quantities may thus be absorbed some of which being re-secreted by the peritoneum helps in the removal of septic material from that cavity. Morphia will probably be required but should be given as sparingly as possible.

Resuscitation After Apparent Death.

Death upon the operating table is a matter of very serious moment wherever it happens. It is perhaps commoner in China than otherwhere, for the reason that we get so many of our cases *in extremis*, or at least in exaggerated conditions of morbid progress. Especially in the interior, where many surgeons find it extremely undesirable to incur the risk of any surgical deaths, those which occur upon the table are particularly likely to enrage the superstitious and unintelligent relatives of the patient. For this reason it is more than a simple precaution, where the possibility of death on the table is anticipated, to make the matter very clear beforehand. The result will, in many cases, take away the chance of permission to operate, but it is warranted and the part of wisdom.

In this connection it is worth noting, in spite of the premature state of the whole question, that George W. Crile's method of resuscitating individuals apparently dead will be found applicable occasionally, where, though little hope may be anticipated of saving the patient, sufficient resuscitation may be attained to enable the surgeon to get the patient back to bed in an apparently viable condition. Crile himself has had several most interesting results, one patient recovering permanently, and not a few others temporarily, allowing the fatal termination to come after the patient returned to his bed.

Quoting from the *New York Medical Journal*,[1] the method is as follows:

> "The patient is placed in the prone posture, and rapid rhythmical pressure is made on the lower portion of the chest, which produces artificial respiration and, to a certain extent, artificial circulation. A cannula is rapidly inserted into an artery and directed toward the heart. To this a rubber tube and funnel are attached, and sterile normal salt solution or Locke's solution or Ringer's solution is poured into the vessel. Other fluids may be used, even to tap water, but the solutions mentioned are preferable. When about a quart of fluid has passed into the blood-vessels, fifteen to thirty minims of a 1–1,000 adrenalin solution is injected into the vessel by inserting the needle of the hypodermic syringe through the rubber tubing close to the cannula. synchronously with this injection the rhythmical pressure on the chest is brought to its maximum, so that the adrenalin solution shall reach the heart promptly. When the pressure within the coronary arteries reaches 30 to 40 millimeters of mercury the heart will begin to beat. The cannula is then withdrawn. The saline solution is used for the purpose of filling the arteries so that the adrenalin solution will reach the heart promptly. If, however, there has been much hemorrhage, the saline solution fills the depleted vessels, giving them fluid to circulate. Such a technic must be applied promptly in order to be of service; the operating-room staff must be so trained that the materials and instruments may be produced within two minutes after the cessation of respiration or of the heart-beat."

—*W. H. J.*

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[1] *New York Medical Journal*, Jan. 2, 1909.

CHAPTER XVI.

DISEASES OF BONES AND JOINTS.

The surgeon is never very long in China without seeing the result of untreated diseases of the bones and joints. Such cases rank amongst the most important and difficult that he has to treat; in some of their extreme forms they will seem strange to the surgeon fresh from western lands, and to the close of his life in China many of them will present almost unsolvable problems. We therefore offer no excuse for dealing with some forms of these diseases rather fully in this chapter.

We shall mention a few of the bizarre results of untreated fracture, and then take the diseases we most commonly meet with as follows:

- BONE DISEASE.
  - Septic osteitis.
  - Tuberculous osteitis.
  - Syphilitic osteitis.
- JOINT DISEASE
  - Septic arthritis.
  - Gonorrhœal arthritis.
  - Tuberculous arthritis.
  - Syphilitic arthritis.
  - Special joints.

From time to time our hospitals are visited by patients showing in their most extreme forms the results of untreated fractures of the long bones. The bones of the leg bearing as they do the weight of the body, when in the erect position, suffer most severely from the results of lack of attention to fractures. Fractures of the femur are happily relatively rare and cases of great deformity connected with untreated fracture are seldom reported. The strangest of these, reported by Browning, Ningpo,[1] was the case of a lad of seventeen, who eight years previously had fractured his right thigh. The upper fragment had been displaced backward, the lower forward and upward with the result that immediately below the groin there was a large mass of tissue protruding forward. The bones had united in this position, the shortening of the leg was made up for by walking on the toes and the boy could do a walk of two or three miles without difficulty. It is, however, in cases of fracture of the tibia and fibula that the most extraordinary results are seen.

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[1] *China Medical Journal*, 1892, p. 155.

One lad under our treatment had fractured his tibia just below the head of the bone, with the result that the leg itself was drawn forward at right angles to the thigh, so that when the boy lay on his back the sole of the foot on his affected side looked directly upward. The knee-joint was anchylosed. The boy could walk some distance, but the gait was most extraordinary. On the affected side the hip was hyperextended, and the body thrown forward so as to get the sole of the foot on the ground. To compensate for the greatly lessened distance between the body and the ground the thigh of the unaffected side was flexed to an angle of about 45° and the leg flexed on the thigh to an angle of about 90°. The result

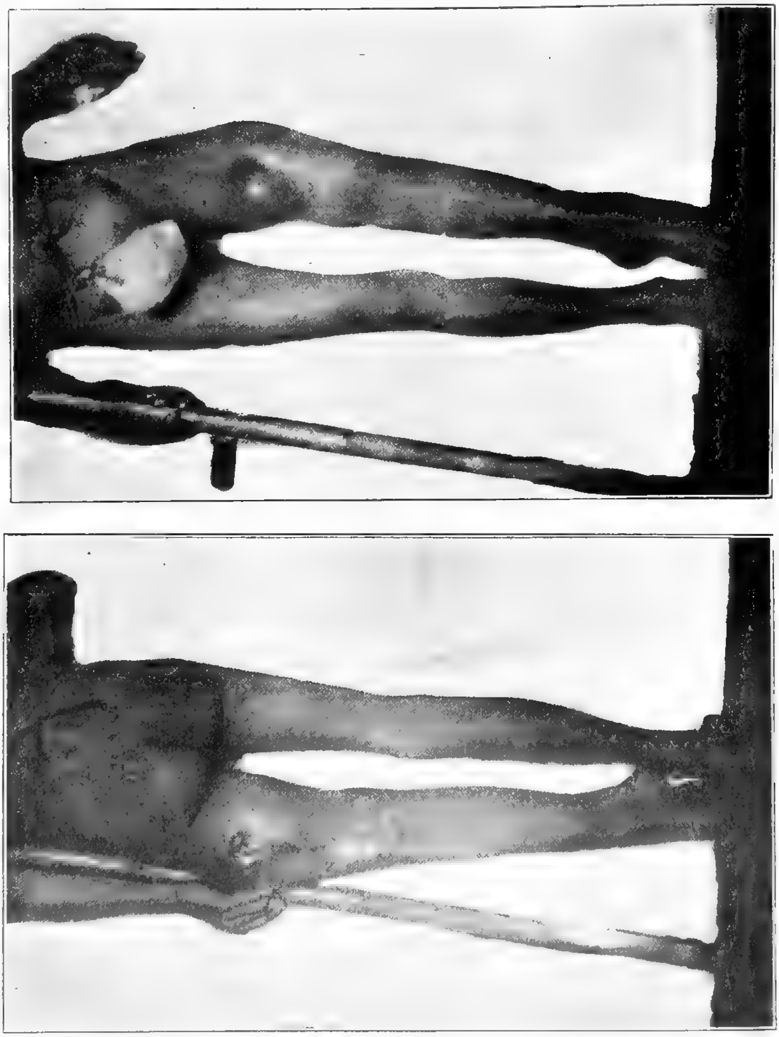

FIG. 151.—Untreated compound fracture of the femur. (*By W. E. Plummer, Wenchow.*)

being that when the lad stood upright there was a space between the legs roughly the shape of a square with the lines joining the angles vertical and horizontal.

A cuneiform osteotomy in the upper third of the tibia produced a most satisfactory result.

Jefferys, Shanghai,[1] reports a case of fracture where the resulting bend was in the opposite direction, as follows:

> "Patient: Tsai Ka-zang, male, aged thirteen. When one year old sustained fracture in the lower middle third of the left leg. The tibia was broken higher by a couple of inches than the fibula. There was apparently no success in treating the accident, and twelve years later, on September 22, 1908, the boy was brought to St Luke's clinic.

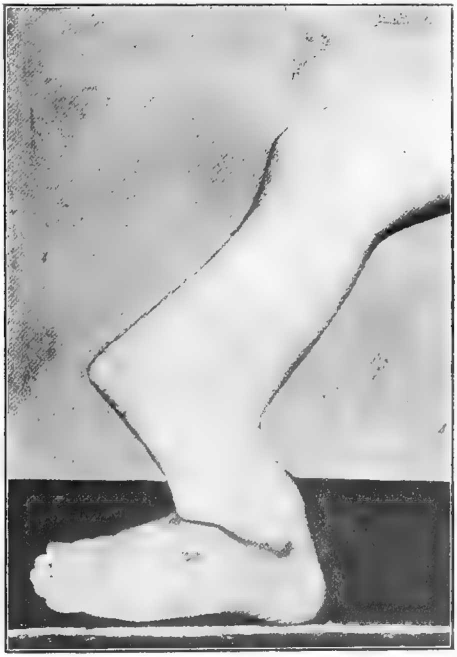

FIG. 152.—Untreated green-stick fracture of tibia and fibula of twelve years' duration. The tibia is bent at a trifle more than a right angle

The accident happened in his first year, that is, while quite an infant. Apparently the tibia was bent somewhat more than a right angle, but not fractured through, while the fibula was probably completely divided. The patient was unable to walk, owing partly to the great shortening and partly to the anterior bowing of the whole limb. He could stand, uncertainly, upon his right foot and left toes. The point of the upper fragment of the fibula pressed upon the arch of the foot and there was some posterior subluxation of the ankle-joint. The skiagraph shows very prettily the condition before operating. The lower fragment of the fibula is seen as a shadow on the tibia and astragalus. There was some union of the fibular fragments; the tibia was strong and solidly united and the skin over it had ulcerated and healed."

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[1] *China Medical Journal*, July, 1909.

Operative treatment was only moderately successful. We had lately an almost exactly similar case under our care, but as the boy could walk fairly well we declined to operate.

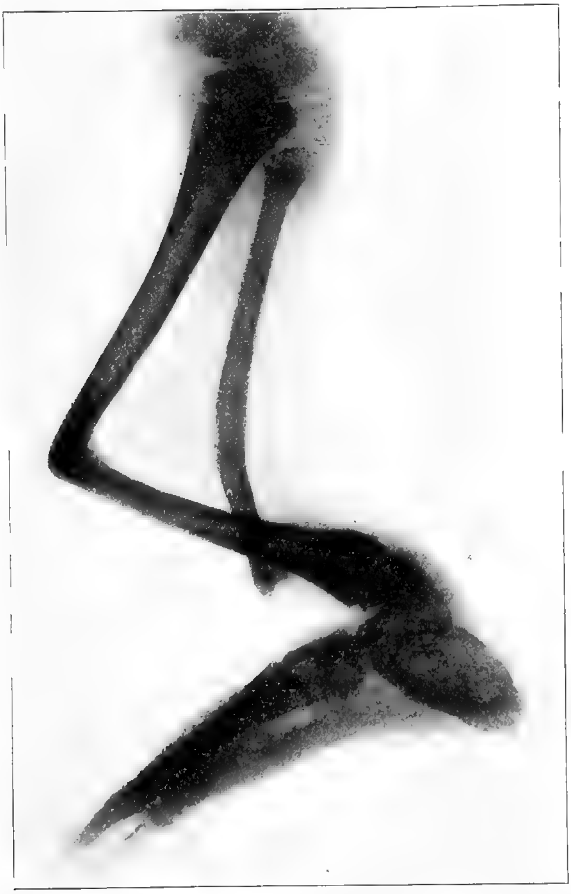

FIG. 153.—Skiagraph of the same before operation. (*By Jefferys.*)

Fractures of the arm sometimes produce curious results, as in the case of a woman we saw some time ago, where a fracture of radius and ulna had resulted in the union of the bones at a considerable angle, the hand pointing inward. Rotatory movements were of course quite lost.

Mal-united fractures round the elbow-joint are more common, their treatment will be dealt with under the heading of "Special Joints."

Septic Osteitis.—By septic osteitis we mean an inflammatory infection which tends to terminate in the formation of pus, and we include under the term all such infections whether they commence under the periosteum, under the endosteal membrane, or in the substance of the bone itself. We do not propose to discuss the pathology of such affections, but shall confine our remarks to the results calling for surgical interference and the methods to be adopted. We do this advisedly, because there are few diseases where even in early stages the call is so imperative for immediate surgical treatment. Confined as the vessels of the bone are in hard in-elastic canals a comparatively slight inflammation leads rapidly to stasis in the blood stream and necrosis of the part; while if pus forms under the periosteum this membrane is rapidly stripped off the bone which may then necrose through the greater part or whole of its diaphysis. The disease is most frequent, though not confined to children, and attacks the diaphysis of a long bone, usually commencing near the epiphyseal line. Predisposing causes are those which result from prolonged illness of any kind, such as the infectious fevers. The disease also occurs as secondary to some other septic infection in the body such as carbuncle, local abscess, etc.

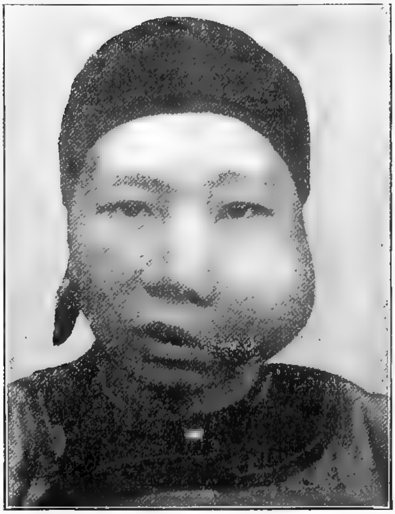

FIG. 154.—Late abscess in the antrum of Highmore. Six years' duration. (*By W. E. Plummer, Wenchow.*)

The disease usually commences in the bone marrow, but spreads rapidly to the bone itself, forms a subperiosteal abscess, penetrates the periostem, and sets up abscess formation in the soft tissues, finally pointing at some skin surface. If the endosteum alone is involved, as happens occasionally, a central sequestrum alone is formed. But if, as is usually the case, pus formation takes place underneath the periosteum the part or the whole of the diaphysis through its entire thickness will die. In such cases fresh bone is formed from the periosteum outside, the sequestrum being thus enclosed within the new bone. In the rarer cases where the periosteum alone is affected only a thin and superficial sequestrum is formed.

Symptoms.—The disease begins with pain, usually acute from the first, at some point in the diaphysis of a long bone, often near the epiphyseal line. Pain is very severe and much worse on handling.

Nichols[1] states as a very valuable diagnostic point that gentle and continued pressure on the shaft of the bone at some distance from the site of disease causes, after a few moments, the pain to become very much intensified. From the commencement the tissues over the affected area are œdematous and soon become red and swollen. The results of septic absorption make themselves apparent from the first and quickly assume a serious aspect, high temperature, etc. If left untreated and the patient survives the constitutional effects, the limb becomes permanently enlarged. sinuses form, and dead bone may be felt with the probe.

Treatment.—As soon as the diagnosis of acute septic infection of the diaphysis of a long bone is established, and with care there is little excuse for failing in this, surgical treatment should be employed without a moment's delay and boldly. A free incision is made down to the bone dividing the periosteum also very freely. In early cases this may be sufficient, free drainage being provided for any pus found. If, however, there is any reason to suppose that mischief is going on deeper down, or if as a result of the operation the pain is not completely relieved, the shaft of the bone should be trephined. We use ourselves a 1/2 inch trephine for this purpose. If pus is found the trephine hole should be further enlarged and this continued as long as pus escapes. The medulla of the bone is then swabbed with pure tincture of iodine, or if preferred with acid carbolic, but it should never be curetted as this only opens up fresh channels of infection.

Unfortunately, especially among the Chinese, we comparatively seldom see these cases at the commencement of the disease. Often they come to us after necrosis has taken place, but before the sequestrum has separated. Two courses are now open to us.

1. To remove the necrosed bone at once.
2. To wait till it has formed into a definite sequestrum.

The first, by far the most satisfactory of the two, should not be attempted till about three months after the evacuation of pus, when the periosteum has already begun to form a fair layer of bone. A long incision is then made ending where the periosteum shows no pus or ossification; this marks the spot where the bone will live. The periosteum is stripped off the sequestrum where necessary, and the whole of this excised. The empty periosteum is brought together with stitches, and the limb put up in a fixed apparatus. Functional use of the limb may be commenced in about six months' time.

Many cases, however, only come to us when the sequestrum is already enclosed in a dense layer of periosteal bone; the sequestrum itself is usually loose in the centre and may be removed by enlarging the cloacal opening in the new bone. This is in itself often quite easily accomplished, but we have remaining a shell of hard bone with nothing to fill it, and therefore a continually discharging cavity with a persistence of sinuses. Many artificial methods of filling such cavities have been invented. None of them can be recommended as really satisfactory. In a certain proportion of cases all methods will fail. We have, however, practised a treatment ourselves which has proved fairly satisfactory. We make a very free incision to give a full view of the whole length of bone involved and then with chisel and saw cut out a good wide strip of the new bone through the whole length of the affected part. This must be done with some care, as the bone is brittle and apt to break. Happily, fractures, should they occur, seem to unite well. Whether it is that this method allows the soft parts to fall into the old cavity and so suppuration to cease or whether an organised clot forms and fills the cavity we do not know, but we believe that the method is at least as satisfactory as any of the more complicated ones so often advocated.

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[1] Keen's Surgery, Vol. II.

It remains to refer to two forms of the disease specially common in South China and Formosa. The first is a group of cases where a local necrosis occurs often affecting the triangular surface of the femur, on its posterior aspect just above the condyles, sometimes further up the shaft. In both cases the sequestrum is very small. In the one case, owing to the proximity of important vessels and nerves, the danger involved in attempting to deal with it radically and in the other the very long and curving nature of the sinuses, calling for enormous incisions which involve important muscles, make the treatment a very difficult one. After experience of a number of these we can but advise the surgeon in this case to employ a masterly inactivity and leave the patients to nature, merely assuring himself that there is no retention of discharge and providing for such in the usual way if there be. Such cases sometimes persist for years, but our own experience is that they recover in the end usually after the discharge of a few flakes of bone.

The second case is that of necrosis of the lower jaw. In China generally we meet with a considerable number of these. They occur not only in children as do the ordinary cases of acute necrosis of the long bones, but mostly in male adults of all ages. We attribute this ourselves to sepsis from the teeth in patients debilitated by malaria or ankylostomiasis or both.

The bone may be affected in the horizontal ramus only, or in both that and the ascending ramus. More rarely in the latter alone. Usually one side only is affected, though we have in one case removed the whole lower jaw in two sequestra. Usually a number of sinuses form into the mouth. Sometimes also just below and near the angle of the jaw on the skin surface. The sequestrum forms early, and in our experience is never tightly enclosed in new bone. All the cases we have seen, and they have been numerous, have come to us with the sequestrum formed and often quite loose. We advise that the sinuses in the mouth be enlarged, making two or more into one, and the sequestrum being seized with sequestrum forceps extracted with ease or with considerable wrenching according to its looseness from the living bone. In the case of the ascending ramus, the condyle and coronoid process will usually form part of the sequestrum, and as this is therefore bulky fairly free incision of the mucous membrane may be required.

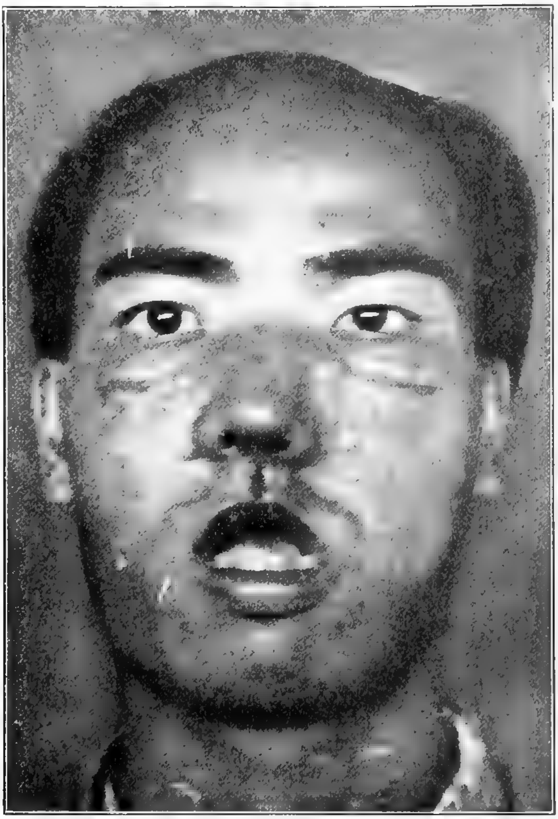

FIG. 155.—Result in complete double excision of the upper jaw for necrosis. Photo two weeks after operation. Tracheotomy was performed for the anæsthesia. (*By Jefferys.*)

Hæmorrhage is profuse, and to the inexperienced surgeon alarming. We recommend the following little manœuvre. If possible, from the beginning, but at any rate the moment the sequestrum has come away, the patient is rolled over with the affected side lowermost, with mouth and part of the face over the edge of the table. The surgeon with the finger of one hand depresses and everts slightly the lower cheek allowing all the blood to run out of the mouth, while he rapidly plugs the cavity left—the firm periosteum makes this quite easy—with a long strip of gauze. Pressure may if necessary be kept up for a short time on the plug by an assistant's finger. If this method be used no anxiety at all need be felt about the hæmorrhage. The bone of the jaw very quickly regenerates from the periosteum left behind.

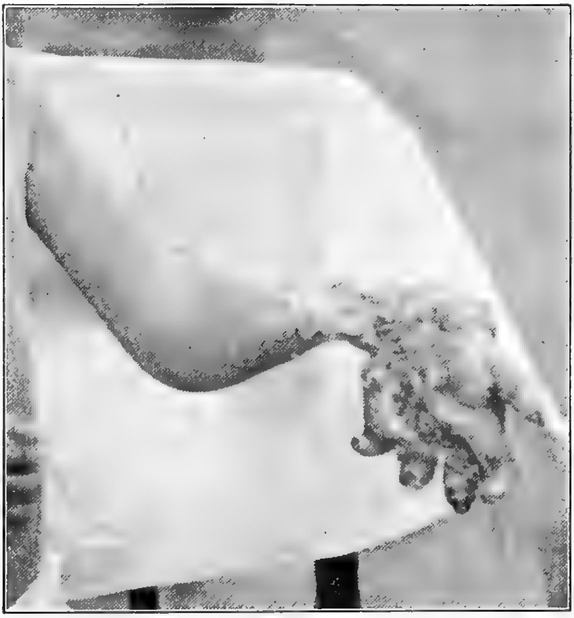

FIG. 156.—Tuberculosis of the hand, the part having been needled by native practitioners. Amputation was necessary. (*By R. T. Booth, Hankow.*)

Tuberculous Osteitis.—Like septic osteitis this form of bone disease is very common in China. It presents, however, no peculiarities that deserve remark here, unless it be that in this, as in almost all diseases, we see more often the late than the early cases. Extensive disease with long septic sinuses about the hip is terribly common. Advanced disease of the epiphyses of the long bones involving the joints often forms puzzles as to treatment. We shall deal with the most important of these infections under the head of "joints."

One form of tuberculous osteitis has come more often under our notice than would correspond with its frequency at home. We refer to disease of the iliac bone. We have seen a number of such cases, some in which the disease has commenced about the crest of the ileum, and others in which the inner side of the false pelvis has been first affected.

Pus tracks from these situations either over the crest of the ileum or in some cases a small sequestrum separates from the body of the bone, leaving a hole in the ileum itself. Most of these are unsatisfactory and there are long and septic sinuses leading down to a small focal point always difficult and often impossible to reach.

The treatment of these as of all cases of tuberculous abscesses should be by a very careful attempt to deal with them aseptically. An incision is made with strict precautions and the pus evacuated. Loose bone should be sought for, as if this can be found and removed a speedy cure always results. As a rule, however, it cannot be found and much time should not be spent in looking for it. The abscess cavity is then sewn up again and firm pressure brought to bear on it with a bandage. In not a few cases a single treatment of this kind proves successful, in others i may need to be repeated perhaps several times. It is of the utmost importance that strict antiseptic precautions be adopted. The tuberculous material makes an excellent nidus for the ordinary pyogenic germs and the cavity being a closed one acute septic symptoms may supervene. Where septic sinuses already exist the difficulties of treatment are increased many fold. If left untreated the patient gradually sinks from amyloid disease. On the other hand, all forms of treatment are eminently unsatisfactory. The best that can be done is to freely open the sinuses and curette as vigorously as is safe their inner linings.

For after-treatment swabbing out the sinus every few days with lin. iodi often accelerates the healing process.

Syphilitic Osteitis.—As we see this disease in the East the most common manifestations may be classed under hypertrophic and necrotic results.

Hypertrophic are seen locally in the form of nodes, of which no description is required here, and a general hypertrophy of the shaft of long bones, one bone only being usually affected. In these cases proliferation usually occurs both in the endosteal and periosteal layer, leading to very marked thickening of the bone and often to obliteration of its marrow canal.

Pain is nearly always present, but is slight and the disease presents few difficulties of diagnosis by exclusion.

Treatment should be given in the way of regular anti-syphilitic remedies. Of course if much thickening has already occurred it is plainly impossible to restore the normal contour, but some reduction in size may take place, and the pain is quickly relieved.

Necrotic results are seen most commonly in the following situations: the palate, nasal and superior maxillary bones, the vault of the skull, and the sternum.

Necrosis of the hard palate is extremely common in China, the usual result is a hole round or oval, from the size of a pea to the size of a Mexican dollar. The extent depends a good deal on the time at which the treatment is begun. If seen early and treatment with anti-syphilitic remedies pushed vigorously the resulting perforation is often very small and grows still smaller with time. We have seen one case where complete closure resulted. As a rule a hole of greater or less size is left. If in a region where the patient can obtain the services of a dentist an obturator may be fitted with excellent results, but this will be very seldom possible in China. The patients will sometimes use wool or other material to fill the hole for themselves, but it is surprising how easily the majority accustom themselves to the opening in the palate, the only observable trouble being the defect in the voice.

Necrosis of the vault of the skull is quite commonly met with in China. It is seldom the patients come to us till the skin has ulcerated and a black dead piece of bone is showing through the hole in the scalp. Such cases would seem to be rare in the West considering the way in which the text-books speak of the great dangers of septic infection spreading to the meninges. We believe these dangers exist mostly in the imagination of the writers. We have ourselves seen very many cases of this form of necrosis of the vault of the skull but have yet to see any septic results affecting the meninges, though thickening of these with persistent headache is less rare. Usually only the outer table of the skull is affected and the sequestrum takes a very long while to separate. We recommend leaving it to nature to produce this separation, but once this has begun it may be assisted by levering the sequestrum free from the rest of the bone by the point of a periosteum elevator slipped under one edge.

Necrosis of the sternum is less common than necrosis in the situations mentioned above. It is, however, a very troublesome form of the disease owing to the extremely lengthy period that ensues before the sequestrum separates. Unless prepared to do a very extensive operation the surgeon had better leave these cases alone. How extensive such operations may be can be well judged from the account of two cases of operation for necrosis of the sternum by Jefferys, Shanghai, in the *China Medical Journal* of November, 1908, as follows:

Necrosis of the Sternum. Resection.—Affections of the sternum seem to make very little impression on medical literature. Among the standard text-books allusions thereto are few and far between. Certain references are made to necrosis, secondary carcinoma, gumma, and so forth; curettement and drainage are recommended in an indefinite way, but for the surgeon who is looking for help and suggestions, there is little of either. Within five years we have dealt with four cases of necrosis of the sternum—one, of the left sternoclavicular articulation, cured by curettement and drainage; one of superficial necrosis of the manubrium, which left hospital before results could be determined. The two other cases are here reported.

Zi Zah-ling, age twenty-seven. Prisoner. Admitted, October 31, 1907, from the Municipal Gaol. Patient was sent in by the health officer for operation. The history is as follows:

About six months previously patient had received several blows from the butt of a rifle on the upper part of the thorax. There was no marked discomfort at the time of the injury, with the exception of occasional coughing and slight pain over the chest. Three months later a small, fluctuating swelling was noted over the upper part of the sternum. This was incised, but no pus obtained. The incision did not heal and a sinus formed. It was afterward enlarged and pus obtained. On admission, two or three small sinuses were leading down to the manubrium, which was covered with unhealthy-looking skin. Patient had slight expectoration, but no tubercle bacilli. November 5, a crucial incision was made over the length and breadth of the manubrium, which was removed in four or five large necrotic portions. The gladiolus was not involved, nor the clavicles. The posterior periosteum was necrotic and a large abscess was found in the superior mediastinum. Four or five tablespoonfuls of necrotic lung tissue were removed from the left side,

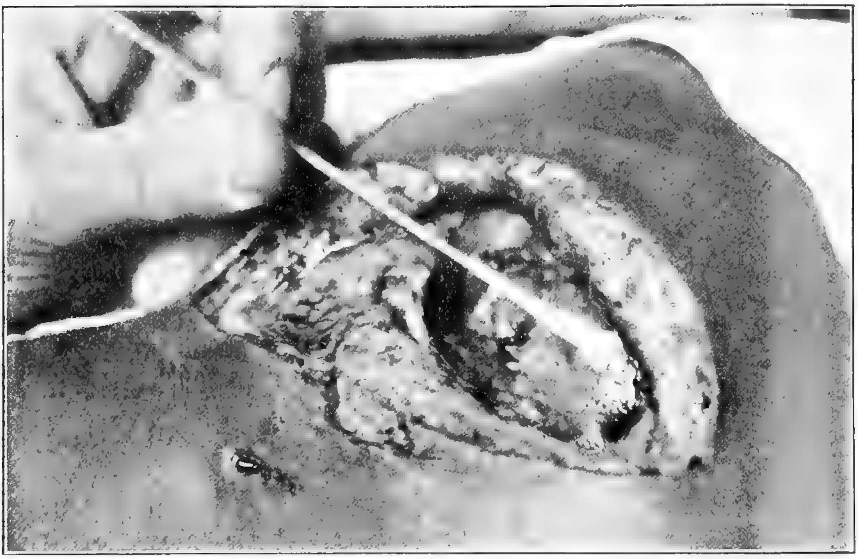

FIG. 157.—Resection of the manubrium at first dressing. Looking from the neck toward the feet. The probe is resting upon the arch of the aorta. (*By Jefferys.*)

the cavity was carefully wiped out, and when cleansed the finger could be placed upon the following structures: the ascending and transverse aorta, the innominate and common carotid arteries. Pulsation of the auricles could be distinctly felt and there was a cavity in the left lung the size of an apple. This, however, was protected by a granulating wall, so that air did not pass in and out. The entire cavity was packed with gauze, which was changed on the second day, when the photograph was taken. It shows the large wound, but gives little idea of the depth thereof. The costal ends on both sides are visible, and one of the sinuses, which pointed in the root of the neck, is seen. The bright spots in the depth of the wound are reflections from moist granulations already springing up on the aorta. Even at this early date the cavity had begun to fill, and showed every sign of doing nicely. On the 16th November an excess of scientific zeal revealed the presence of ankylostomum eggs in the stool, and in order to improve the patient's general condition the following were given:

7 a.m.,	30 grains thymol.
8 a.m.,	20 grains thymol.
8:30 a.m.,	1 ounce magnesium sulphate.

The patient was taking at the same time a mixture of nux vomica and whiskey t. i. d. Within twelve hours patient developed intense headache, some cyanosis, slight wandering delirium, nausea, and, later on, stupor. These symptoms progressed for four or five days, when the wound began to show signs of glazing and drying, and the patient died on November 26, badly cyanosed still and with every sign of meningitis. We attribute the death to the administration of even this reasonable dose of thymol in the presence of the amount of alcohol contained in the whiskey mixture, and believe that, except for this accident, we should have to report the successful result of one of the most remarkable surgical conditions we have ever seen.

Tsang Zau-ding, age twenty-three. Farmer. Admitted December 19, 1907.

History.—About a year and a half previous, on the front of the upper sternum there appeared a movable tumour about the size of a walnut. Its first manifestation was quite sudden; no pain or feeling of discomfort. It soon ruptured and discharged its purulent contents, and the surrounding tissues began to show signs of involvement. The skin was unhealthy and glistening, new sinuses developed, and so on. The patient was delicate looking, anæmic, had slight expectoration, but no tubercle bacilli. On December 20, under chloroform, a median incision was made the entire length of the sternum, which was completely removed, being found more or less necrotic throughout. The anterior ends of two or three ribs were also removed. Sinuses were found running behind the sternum and leading in various directions, but the posterior periosteum was not broken through. At first, and for several days, great difficulty in respiration manifested itself, until complete abdominal respiration became established Slowly the cavity filled and the chest collapsed by contraction until the ends of the ribs came together in fibrous scar union. Respiration became entirely abdominal and remained so; the chest heaving very slightly under effort. Patient's general condition improved immensely; he became plump, with good colour and other signs of generally improved health. There still remained the sinus apparently from the fourth rib on the right side, which will need later treatment, and possibly a couple of points at the rib ends will also need curretting. But at this time (May 14, 1908) the patient's condition is excellent and the prospect of a cure is pleasing.

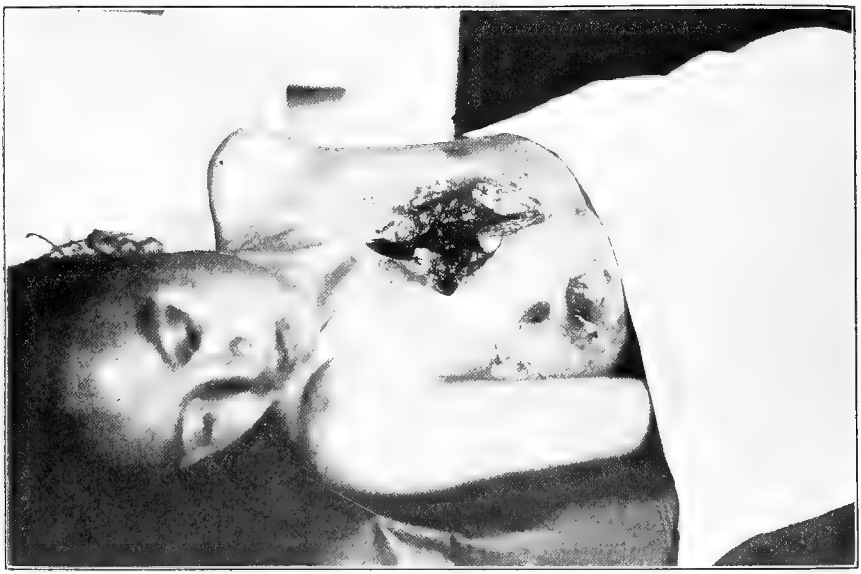

FIG. 158. -Complete resection of the sternum at first dressing. (*By Jefferys.*)

The photograph of Case II was taken also at the first dressing. The lateral extensions of the wound were made to deal with the ends of the ribs.

Whether these cases were tubercular in origin or otherwise is not quite clear. The Chinese farmer uses long-handled, heavy tools, and may be supposed to press with his chest in the course of his labour in such a way as to bruise the bone. The prisoner has clearly the history of presternal injury. Neither patient showed tubercle bacilli though both had coughs and expectoration.

There is no difficulty in the performance of the operation; serious as it is and in spite of the collapse of the chest following thereon, there is precisely the same indication as in deliberate collapse of the chest produced in extensive resection of the ribs in chronic pleurisy. A necrotic bone is its own indication for removal, and no matter what its site may be, if it can be reached by human means, it is better out than in. We have come to this conclusion with relation to necrosis of the pubis, which we have seen several times and which required extensive removal and was followed by collapse and mobility of the pelivs, but we cannot imagine that a necrotic pubis would by anyone be considered better than none.

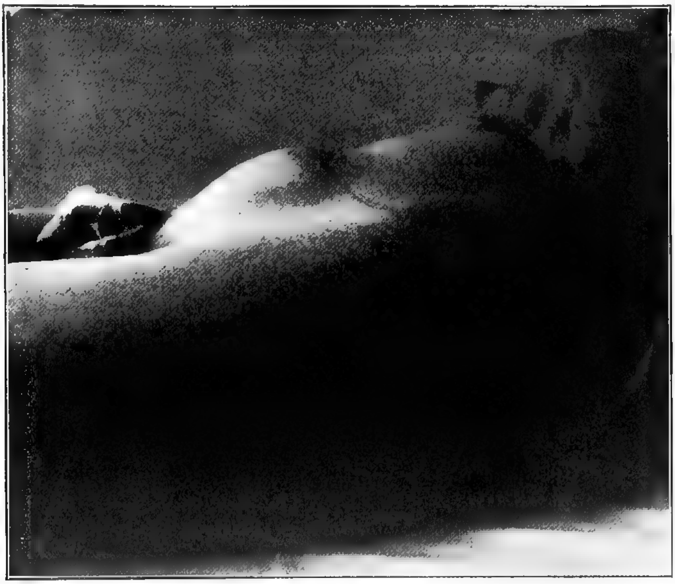

FIG. 159.—Tubercular caries of the pubic bone, with cold abscess over the bladder. (*By Jefferys.*)

Diseases of Joints.—Septic arthritis is usually the result of penetrating wounds of the joint, the weapon carrying septic germs into the joint cavity, or it occurs in the course of an attack of pyæmia, the infection being then metastatic.

The general result in either case is the same. The joint becomes rapidly distended with pus, the articular cartilages become eroded and finally destroyed. The capsule of the joint becomes penetrated by the pus which tracks along the neighboring muscular sheaths. If left untreated the patient rapidly succumbs to the acuteness of the septic process.

The principles of treatment are two.

1. That in all cases where the capsule has not been penetrated and pus spreads along a limb, immediate free incision with adequate drainage be adopted. Of all joints the knee-joint is most frequently affected and the remarks that apply to it will with necessary modifications apply to all other joints. Free vertical incisions should be made on either side of the joint, dividing the capsule and synovial membrane very widely. The joint should then be thoroughly washed out with some very weak antiseptic solution from an irrigator at a temperature of 105° to 110° F., special care being taken to thoroughly clean out the large pre-patellar bursa. A drainage-tube should be carried right through the joint and two others should lead from the pre-patellar bursa to the lateral incision. The leg is then put up on a fixed apparatus, very slightly flexed. The further treatment should depend entirely on the temperature chart. If this falls and does not again rise nothing is required but occasional antiseptic dressing. But if the temperature rises again thorough irrigation should be daily practised. By adopting these measures we have ourselves seen a woman who had her knee-joint opened by a blow from a hatchet and came to us with the joint full of pus leave the hospital with almost perfect movement of the knee. Pyæmic cases are still more amenable to this treatment if taken early.

2. Unfortunately, all cases do not follow this happy course. Either they are brought to the hospital with the capsule of the joint already penetrated and pus tracking up the muscular sheaths, or the infection is a particularly virulent one, and the measures mentioned above are not sufficient to stop the spread of the infection. The only course now open to the surgeon is amputation or in the case of a joint, *e.g.*, the shoulder-joint, not lending itself to this, excision. But while this rule sounds easy, in practice it is a matter of the utmost difficulty to know how long we may safely delay this mutilation in the hope of still saving the limb. We can recall several cases seen in surgical practice at home and we have a vivid recollection of two cases under our own care out here, where life was sacrificed by delay, and the operation when at last carried out was too late to save our patient. We recommend that where septic sinuses are already tracking between the muscles or where the temperature continues to rise irregularly after drainage has been carried out, amputation be not delayed. In any case, however well our patient may seem to be keeping, if more than one rigor occur—malaria being excluded—and septic material be still coming away from the joint, amputation should

be carried out at once. We have still a difficult point, however, to settle. Take a joint like the knee-joint again as an example: are we to amputate high up the thigh in the hope of getting an aseptic healing, or are we to amputate near the joint, thus getting a better stump and less immediate shock, but risking the long healing process inseparable from an operation through septic tissues?

It must be remembered in deciding this point that we are almost certain to be deceived in the length of the septic tracks, and shall find that they reach much higher than we anticipated, indeed much further than the actually visible sinuses. It is, therefore, quite probable that however high we go we shall fail in an aseptic result. We therefore favour a comparatively low operation, slitting up and wiping out with pure carbolic acid any sinuses, and leaving the flaps either completely open or merely sutured with a single stitch at each corner.

Gonorrhœal arthritis is really a form of septic arthritis of a mild type, in this way it closely resembles another form of septic arthritis not uncommon in parts of South China, where dysentery is prevalent, and which, were one to follow this rule of nomenclature, we should call dysenteric arthritis, in the same way as we have a typhoid and a pneumococcal arthritis. It is a pity that these names have been introduced, and it were better to include the whole under the term subacute septic arthritis. In all these forms the specific micro-organism may be found, or only the ordinary pyogenic germ.

Gonorrhœal arthritis is extraordinarily common in China, by far the commonest form of joint disease that we meet.

The attack is usually monarticular, affecting most commonly the larger joints. But we have seen a case ourselves in which practically every joint in the body, including those between the spinal vertebræ, had become infected and anchylosis had ensued. The form of the attack and the result vary considerably. It may be mild, and though always inclined to be chronic, may clear up without any serious damage to the joint. On the other hand it may be severe with great pain, swelling and redness of the joint, and may end with permanent stiffness, and even true anchylosis. All forms between these two exist.

Treatment. Heat is valuable in all such cases, even the simple method of keeping a thick flannel binder round the joint may be productive of great benefit. In other cases hot air baths may be tried and often prove very helpful. Jefferys referring to Bier's hyperæmia treatment of this affection says:

> "The disease though resistant to most other forms of treatment will usually respond promptly to Bier's hyperæmic congestion, either by elastic constriction or some form of suction."

Some acute cases remain which need more active treatment. In cases of continued distention of the joint puncture with aspiration is sometimes of value, and gives the important opportunity of obtaining material for the preparation of a bacterial vaccine. In other cases free incision with drainage and irrigation of the joint may be the only measure left to the surgeon.

In all cases deal with the primary cause.

Syphilitic Arthritis. –Syphilis of the joint is far from being as uncommon in actual practice as the text-books would lead us to suppose, at least that is in our own experience in Formosa. Joint disease in syphilis may occur during the secondary stage and in such a case in no wise differs from the form of arthritis just described. It is more frequently seen as a tertiary manifestation, especially in congenital syphilis, in which case it is usually seen between the ages of ten and fifteen. It appears as an almost painless swelling of the joint, is usually bi-lateral, affects most frequently the knee, and then the ankle. It is much less painful than tuberculous disease of the joint, and is easily distinguished by this alone on careful examination, though it may occur either as a thickening of synovial membrane, or a distention with fluid. It disappears slowly but steadily under external use of ung. hydrag. and internal of iodides, but is apt to recur.

Tuberculous Arthritis. –This is too large a subject to deal with at all exhaustively in this book; it is, however, unfortunately too common a disease among the Chinese to leave wholly untouched. The symptoms and diagnosis must be looked for in the ordinary text-books of medicine and surgery. We propose to deal with local treatment only and refer especially to the treatment of one or two joints.

Rest is absolutely essential for the rapid promotion of healing; it should be provided either by the recumbent position, splints, or weight extension. It is unnecessary to remind our readers how almost impossible this first principle of treatment is to enforce among the Chinese.

Local applications are of comparatively little value, but do not deserve the absolute condemnation that they receive in the most modern text-books. We have certainly seen definite improvement follow an early affection of the joint by the use of Scott's dressing, the external application of iodine, and still more by free application of the actual cautery. We are not going to argue as to how these discredited remedies act. It is certain that our forefathers, who were no more fools than ourselves, believed them to be of very definite value. Our own opinion is that an application of the actual cautery is often of the greatest value in an early case, and we incline to attribute the result to two factors: the hyperæmia produced, and the enforced rest which otherwise it is most frequently impossible to get a Chinese patient to take.

Bier's hyperæmia treatment is not as successful in general application as applied to tuberculous joints as it is in gonorrhœal arthritis. It should be confined in use to cases seen quite early. Fresh air treatment where possible is the best of all, but it is seldom practicable in work among the Chinese.

Abscesses and sinuses round the joint should be treated on the principles recommended under tuberculous osteitis.

Excision.—This is the operative measure most often required, it will be dealt with more fully under the heading of "Special Joints." Unfortunately it often proves far from satisfactory.

Amputation.—In the end amputation may be required where persistent septic sinuses are present round a joint, especially in cases where the knee, ankle, and elbow are affected.

SPECIAL JOINTS.

Hip.—We find that the best treatment for hip disease in the early stages is recumbency with weight extension. The weight extension has the double advantage of giving the necessary traction and ensuring recumbency, a most difficult thing to do in China. Extension should be commenced with a weight of about 5 pounds and gradually increased till shortening and lordosis are abolished. One warning must be given here. It is useless to place a patient on a bed and apply extension on a plane parallel with the bed without noticing whether lordosis is present.

To be of any real value the patient must lie flat on his back with the thigh flexed until all lordosis is abolished, the leg is then placed on an inclined plane at this angle, and weight extension employed. Every few days the leg may be lowered an inch or two without causing lordosis and this is continued until the two limbs are again parallel. We recommend that having got the patient on his back he should be kept there as long as possible, hoping thus to effect a complete cure. When we can do this no longer, we put the patient up in a plaster-of-Paris splint from foot to top of pelvis. Our experience of trying to treat the Chinese with ambulatory extension splints has ended in absolute failure.

Others may have succeeded better; we cannot recommend this method. In advanced cases with septic sinuses, lardaceous disease developing and after failure of other methods, excision of the head of the bone must be employed.

For this operation the best incision is Kocher's curved external incision, extending from the base of the outer surface of the great trochanter upward to its anterior superior angle, and from thence obliquely upward and backward in the direction of the fibres of the gluteus maximus. The gluteus maximus is divided in the direction of its fibres. The gluteus medius, minimus, and the pyriformis are detached from the trochanter and retracted upward. The insertions of the obturator internus and gemelli are detached and retracted downward. The capsule of the joint is divided, the ligamentum teres snipped through and the neck divided by hammer and chisel. Any foci in the acetabulum and trochanter are scraped out and the wound closed without drainage unless septic sinuses are already present. The limb is put up on a splint, and later in plaster of Paris in an abducted position.

Amputation at the hip is rarely justifiable in China as it usually precludes the patient from earning a living, and foci in the acetabulum are probably as easily dealt with by a well planned excision as after disarticulation.

Not a few cases come to us long after active disease has ceased but with the joint anchylosed and the limb adducted and flexed to a degree that almost prevents the patient working. For such we believe the routine operation should be Gant's osteotomy below the great trochanter. The operation is easy, convalescence is rapid, and the patients can in the end walk practically any distance without the aid of a stick and with only a slight limp. The operation consists in a vertical incision about one inch long, dividing all the tissues down to the bone on the outer side of the femur just below the great trochanter. An osteotomy chisel is introduced in the line of the incision, pushed down to the bone, and then turned at right angles to the incision. The bone, often thickened, is divided, not with a few taps of the hammer as works on surgery usually state, but often after some very vigorous use of the mallet. The skin incision is closed with a stitch and the leg put upon a long splint with extension. The limb may be put up in plaster of Paris after from two to four weeks, and the patient allowed to commence walking on crutches in eight weeks' time.

Knee.—The treatment of tuberculous diseases of the knee-joint is simple enough in early cases and consists in affording rest to the joint by putting a plaster casing round the limb extending some inches above and below the joint and if possible raising the leg from the ground by a patten on the other shoe.

The cases, when they come under our notice, however, are frequently much more advanced, with considerable swelling, often great tenderness, flexion often marked, and not rarely great displacement of the bones. In a few cases the flexion may still be overcome by the rest afforded by plaster bandages, the leg being straightened slightly each time a bandage is applied.

Various apparatuses are made to effect reduction of the flexion; we doubt the value of any of these. If the disease has ceased to progress and bony anchylosis has ensued osteotomy of the lower end of the femur may give good results, but such cases are in our own experience rare.

Excision of the knee in bad cases offers the only hope of recovery and in adults is a fairly satisfactory operation. It should, however, seldom if ever be performed on children, as, interfering with the two most important epiphyseal centres of the leg, it causes great shortening. Amputation is the last resort and should not be delayed too long.

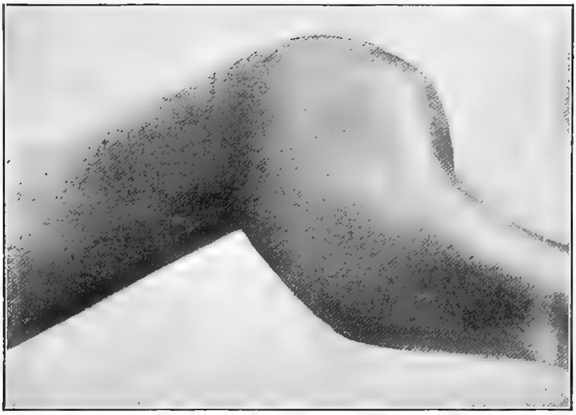

FIG. 160.—Tubercular arthritis of the knee-joint. Side view. (*By Jefferys.*)

Shoulder-joint.—Treatment by immobilisation is usually successful though almost always resulting in anchylosis. In very advanced cases excision of the head of the bone may be performed, the operation is easy if kept for cases that absolutely require it, that is, cases with much destruction of bone and ligaments. Where septic sinuses are already present, convalescence is apt to be very protracted, and sinuses to persist.

Elbow-joint.—The treatment of tuberculous disease of the elbow-joint is the same as for the knee-joint; in early cases fixation, in late cases excision. As a last resort, amputation.

Wrist.—The treatment for tuberculous disease of the wrist is very tedious; when advanced, excision by scraping should be practised.

Ankle.—In all early cases the treatment should be by immobilisation, with, if the disease be more advanced, curetting of sinuses, and scraping out dead bone. If repeated several times this is usually successful.

Excision is in our opinion useless.

Amputation is seldom called for, but may occasionally be necessary.

Two other injuries to joints as being peculiarly common in China should have some description.

Injuries about the elbow-joint, whether dislocation. fracture, fracture dislocation, etc., commonly terminate in anchylosis of the joint in a people who have no knowledge of anatomy or the proper use of splints. The result is that excision of the elbow is relatively very frequently required. As it is an operation which performed with judgment is often a brilliant success, and as we find many surgeons hesitate to perform it, we give a short description of the operation as we do it ourselves.

The arm is rendered bloodless by an elastic bandage and tourniquet. A median posterior incision about 5 inches long is made, the centre of which corresponds to the tip of the olecranon process. The incision is carried down to the bone at once throughout its whole length. The muscles and fascia are separated off first from the outer and then from the inner side by means of the knife and periosteum elevator. Special care should be taken on the inner side to keep close to the bone and thus avoid any damage to the ulnar nerve. In cases where the excision is performed for dislocation of the ulna backward the operation is simplified by cutting off the olecranon process with bone forceps early. Otherwise the deep gap between the humerus and the ulna makes separation of the muscles much more difficult. The capsule is now divided above the olecranon transversely, the arm well flexed, and the heads of the lower bones thrust out of the wound. The saw cut removes the head from the radius, and the greater and lesser sigmoid cavities with the olecranon from the ulna. The humerus is sawn through tbe base of the condyles. The wound is sutured and the arm put up well flexed on an angular splint with a screw joint to allow of passive movement. Passive movement of fingers and wrist is begun on the third day and of the arm at the end of a fortnight. The only serious difficulty is to know exactly how much bone to remove, if too little is taken anchylosis will again occur, if too much the joint will be flail-like and the arm weak. We have indicated above where the saw lines should usually be made, but only experience will teach the surgeon how far he may safely go to get the best results.

Subluxation or spontaneous dislocation of joints is also relatively common, as the result of gonorrhœa, pyæmia, or merely prolonged lying in bed in the course of an acute disease. The joints most seriously affected are the hip and the knee.

Excision of the hip should in our opinion not be attempted; it is a much more serious and difficult operation than would appear at first sight. Gant's osteotomy is the operation of choice, see p. 404. Subluxation of the knee, combined as it usually is with flexion, is a very serious trouble. It will be well first to try division of all the tendons with extension; but in severe cases where the use of the leg is greatly interfered with, excision is called for.

CHAPTER XVII.

DISEASES OF THE SKIN.

Skin disease has a **normal place** in the practice of medicine in China. We are neither impressed with its excessive prevalence, nor starved in any sense for clinical material. On an average, the Chinese do not keep their skin clean, but as an offset thereto live largely in the open air (practice air bathing), making a balance on the vermin question slightly in favour of the Chinese as against the poorer classes in Europe and America.

"**Skin diseases** are treated by the thousand. Parasites and hydrophobia in its literal meaning, namely, dread of water, are the prominent causes."—*Main, Hangchow,* 1907.

Perhaps one is struck, on reviewing the whole question of skin disease in China, with the **greater prevalence of the dryer skin diseases** as compared with the moist. That appears to be the most salient characteristic, and though it is far from a universal rule, it is well worth noting. We find the dry seborrhœas predominant, the chronic and scaly eczemas, psoriasis, ichthyosis, cornu cutaneum, callosities, tinea imbricata, tinea favosa, xeroderma, and the like more prevalent by far than hyperidrosis, moist eczema, acne and so forth.

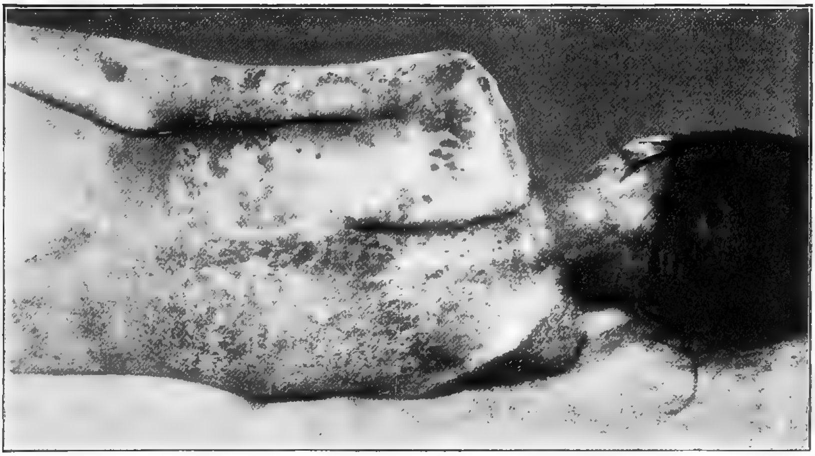

FIG. 161. –Dermatitis from disease and neglect. (*By Jefferys.*)

The **sweat glands** are hardly more active than in the white races, and less so as compared with the coloured races. (There is no Chinese odor recognisable as characteristic of the race. What one hears occasionally spoken of as such is probably the more or less rancid hair oil so generally used. The same is undoubtedly true of what the Chinese and Japanese speak of as the "smell of the foreigner," which is due to the use of either perfumes or soaps, etc. We have a dear friend and his wife, the personification of immaculate cleanliness and much given to ablutions who, traveling many years ago in the heart of Japan, overheard the chair coolies telling each other that it was almost unbearable "the way these foreigners stink," when they realised that the mosquito lotion they had been freely using had made an unfortunate impression.) There is less tendency to maceration of the skin—attributable in part to the above, and in large part to the nature of the clothing worn which allows free circulation of air. On the other hand, there is the drying effect of the air, and the habit of the nation to expose itself freely and fearlessly to the direct rays of the sun, which is of great power and undoubtedly is responsible for the national flesh tints, from the light olive of the better-to-do to the deep brown of the farming and boating population;[1] and is probably also responsible for the extra palpebral folds acquired as a special protection against glare. Possibly other factors enter in, which will develop as we study the conditions further.

In the recognition and differentiation of skin diseases one should ever keep in mind **the great trio** which prevail. We allude to syphilis, tuberculosis, and leprosy. If one can recognise these unfailingly, and the lesions due to the animal parasites, one has already a sound foundation for skin practice; and without the ability to differentiate these major affections, one is constantly living in a state of doubt and uncertainty, as well as subject to frequent serious error.

Tuberculosis of the skin takes a variety of forms, of which the following may be called common:

1. **Lupus Vulgaris.**—It is commoner in the north than in the south. Maxwell (Formosa) believes the tropical sun is inimical to skin tuberculosis. It is unnecessary to enter into any description of this common disease. The usual location is the cheek, especially around the alæ of the nose and extending occasionally into the nostrils, to the side of the head, and the neck. There is not usually any particular indication of failing general health, nor has the disease been extensive in any case we have treated,[2] the largest patch covering one entire side of the neck and

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[1] We have seen in Weihaiwei a pure Chinese man (not a coal heaver) who was all but black in colour, like an African, but not at all so in features

[2] Claude Lee (Wusih) has taken photos of a truly extensive infection of forearms and chest, with much impairment of the health, and metastasis.

face and region of the ear. The disease has its usual chronicity, pain, marginal extension, central healing and contractile scarring. In the case referred to, the auricle was drawn against the scalp and merged therewith completely as far as its approximating surfaces and edges were concerned.

We have found the following **treatment** most efficient and it must be remembered that by no means the whole of the lupus patch needs treatment, much of it having usually healed already. There are to be treated the extending margin and certain isolated tubercular nodules. With small, short spoon curettes of various shapes and sizes, under chloroform, those parts undergoing active tubercular infiltration are scooped and curetted away, the tubercular nodules completely scooped out, hemorrhage stopped with hot water, all the curetted surfaces painted with pure carbolic acid, and ointment dressings applied, and the parts allowed to heal. The first treatment is usually extensive. A couple of subsequent treatments at intervals of two weeks or so will complete the cure. Appropriate tonic treatment should not, if indicated, be neglected. Such

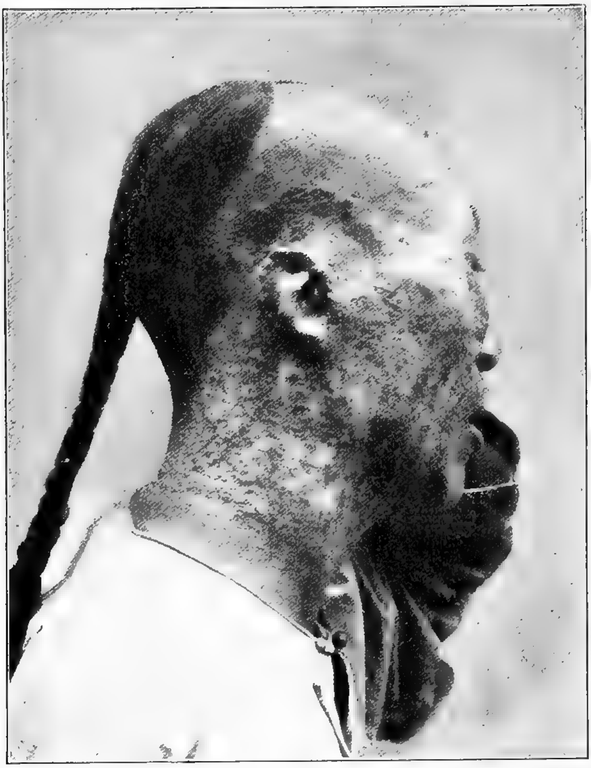


FIG. 162. –Lupus vulgaris. Shows contractions about the auricle. (*By Jefferys.*)

a case as that shown (Fig. 163) was completely cured in two treatments to the entire satisfaction of the patient and to his almost instantaneous relief from suffering.

A more modern and very effective treatment for lupus which could easily be arranged for is the application of CO_2 snow, which is also applicable to the removal of tattoo marks, nævi and hairy moles. The application is made for twenty seconds to one minute with pressure, and is repeated once a week. For lupus it is exceedingly satisfactory.

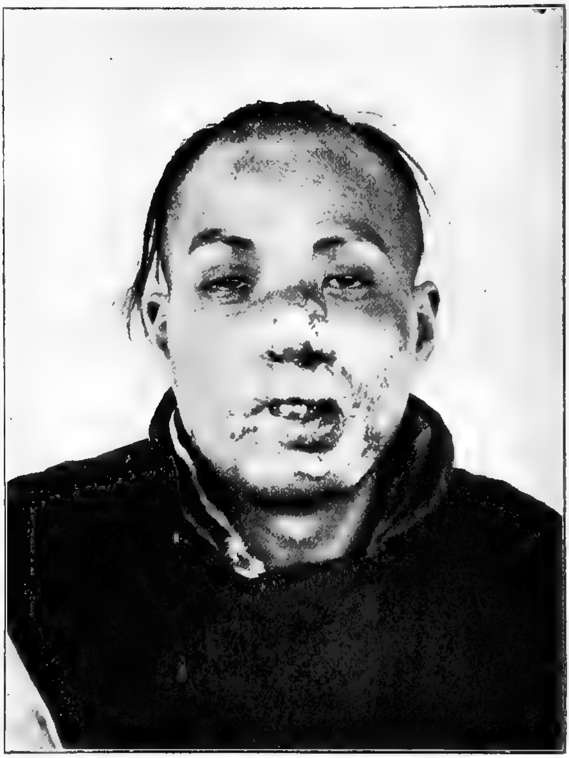


FIG. 163.—Lupus vulgaris, extending into the nostrils. Cured by curette and cautery. (*By Jefferys.*)

2. **Tubercular infiltration** of the subcutaneous connective tissue, with local abscess and sinus formation. This is a more serious affection by far than lupus. It is usually present in the region of the anus and buttocks (the latter the favourite location), less frequently on the legs and arms, though any part may be affected. The health of the patient is more or less impaired. Locally the surface appearance is bad enough, brownish pigmented skin, painful to the touch, invariably prolonged to one or both sides of the urethra (if on the buttocks), with sinuses near

the anus and at other points, but an attempt at curettement and evacuation will show a worse condition underneath—a complete undermining of the skin and development of extensive tracts of tuberculomatous tissue. The bacillus tuberculosis is easily found in the pus and granulations from these cases.

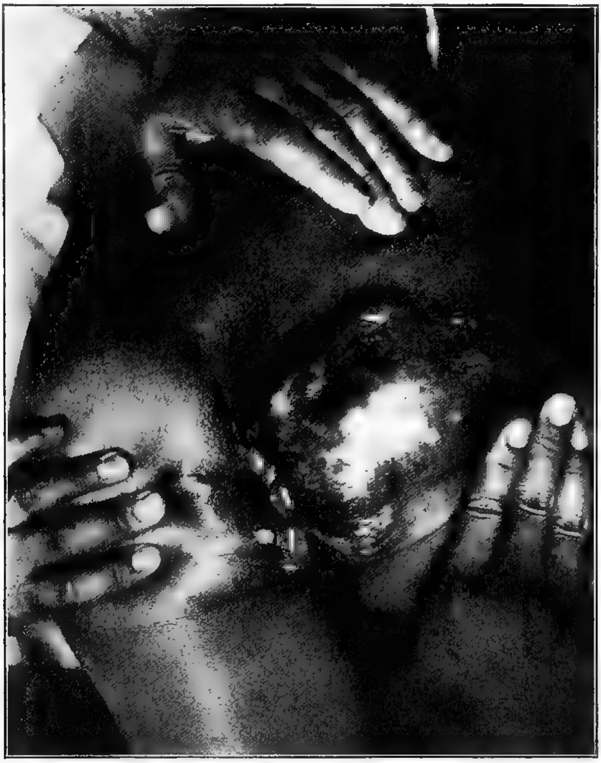


FIG. 164.—Tuberculous infiltration of the buttocks. Operation by excision. Tubercle bacilli were found in the pus from the sinuses. (*By Jefferys.*)

"Cases of extensive fistula in ano come from time to time. Thus this year we have had patients with sinuses tracking all over the buttock up as high as the waist, and down the thigh as low as within 3 inches of the centre of the popliteal space."—*London Mission Men's Hospital, Hankow.*

In this condition also scarring is a marked factor (see Fig. 166). A case in our hands showed contraction of the subcutaneous tissues drawing the fourth toe back almost to the instep and burying all but its tip in the process, the third and fifth toes being drawn half as far back and the second slightly so. An attempt was made to open thoroughly and curette the affected parts; there was considerable hemorrhage and a complete operation was impossible. After some delay, amputation was performed in the middle of the thigh, and a good result temporarily obtained; the patient dying, however, within six months of general tuberculosis, which we now attribute to the unwise curettement and opening of blood sinuses thereby. In a similar case at the present time we should advise immediate amputation above all affected areas or a complete extirpation of the area. Several cases similar to this have been reported in the *China Medical Journal*, and the condition is very common.

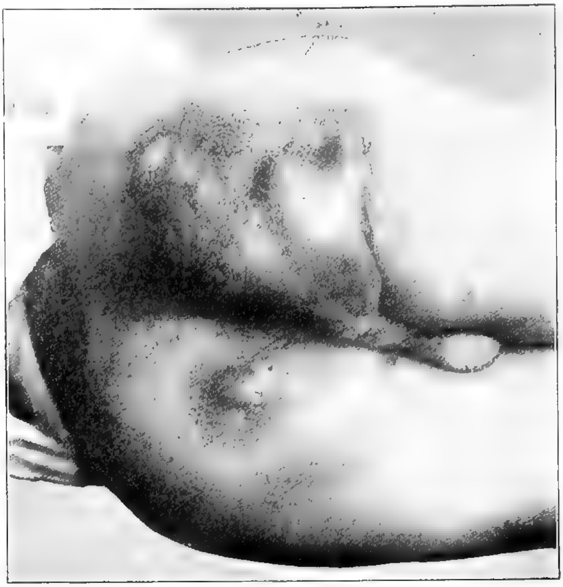


FIG. 165.—Tubercular infiltration of the buttocks. Tubercle bacilli were found in the pus from the sinuses. (*By Jefferys.*)

3. A condition which we believe to be tubercular, which is not uncommon in China, but of the pathology of which we do not feel entirely certain, we shall describe at this point, taking a particular case by way of example.

The locality of election of this condition is in the neighbourhood of the buttocks, and indeed of the pelvis in general. The skin lesion is usually either a small sinus leading to a pocket of granulation tissue, the same being covered by a thin, unhealthy skin, or a similar condition no sinus having yet formed. These lesions are apt to be multiple. On opening and curetting, one is disappointed to find that the lesion is not limited to a pocket, but extends in one or more directions and communicates, sometimes at a depth from the surface, with other similar lesions. These communicating passages are made up of jelly-like granulation tissue, either purulent or cheesy, and showing considerable tendency to venous bleeding. The passages are usually sufficiently large to admit the forefinger with ease, and ramify perhaps around the ischial tuberosity or other bony part of the pelvis, not, however, communicating, as far as one can tell, with diseased bone. The passages are lined with dense fibrous scar-tissue, which prevents proper healing even though they be thoroughly emptied, curetted, packed and drained. The most typical example of this form of disease we have seen was in a boy ten years of age and had existed for several years without extensively breaking down, only one small sinus having formed while the internal ramifications were very considerable. One is reminded, on examination, of some sort of subterranean passageways, communicating and branching in various directions. The condition is difficult to treat successfully, and usually terminates fatally. It is a granuloma and probably tuberculous. This condition is not the same as the better known and, in China, common certainly tuberculous conditions shown in Figs. 164 and 165.

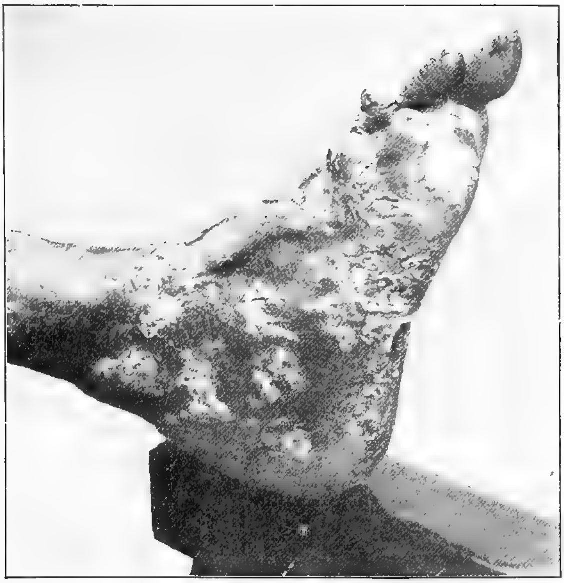


FIG. 166.—Tubercular infiltration of subcutaneous connective tissues, necessitating amputation above the knee. (*By Jefferys.*)

Leprosy.—See Chapter IV.

Syphilis.—See Chapter XX.

Next in importance come the various lesions due to **animal parasites,** of which **the flea** is the most universally prevalent among the Chinese.

The interesting spectacle is familiar of the Chinese beggar sitting by the wayside picking fleas off of himself or a comrade and biting them to ensure extermination—a true and authentic relic of the habits of prehistoric man. Aside from the association of these parasites with the communication of plague and other serious diseases, the local lesions are insignificant.

The louse does not play the important part in Chinese household economics that it does in the verminology of Europe and America. It is found, it is true, and commonly so, but the hygienic national custom of combing the hair with a fine-toothed comb very much limits the prevalence of the parasite and all but confines it to the beggar and apprentice classes, who are not careful as to their coiffure.

The sand-flea (chigger).—In Ningpo (China) Blandford observed that the chigger infested rats.

The **bedbug** is a veritable pest and the bane of the hospital housekeeper. It is a dangerous beast, undoubtedly, from its ability to communicate various diseases, probably including relapsing fever and leprosy, and possibly beri-beri. And it is a prevalent parasite, being, as with us, associated with beds and bedding and finding an easy lodgment in the native wooden unpainted bedsteads with their cocoanut-fibre springs and much be-curtained coverings, and particularly the bamboo beds of the south. In hospital we find the greatest difficulty in keeping the parasite within bounds, little being accomplished by the use of the Lawsons-Tait bedsteads since the vermin infests the board floors and wainscoting, from whence it issues like other beasts of prey to devour during the night hours. When a hospital becomes infested the worst manifestation is in fracture dressings and plaster of Paris. These afford harbour for the vermin and the patient is greatly tormented and infection threatened. If bedbugs are about the fractures should be carefully watched. The fumes of spirits of wine will kill them instantly; and crushed camphor balls laid in the outer dressings will keep off the pest.

The **itch mite** is also excessively prevalent, especially among the beggar class. (An old Chinese proverb says, "Of ten men, eleven have itch.") These suffer from the disease in a truly terrible form, sometimes being infested from head to foot, the skin being riddled thoroughly with furuncular lesions. The disease is entirely typical and according

"Itch (scabies) holds the third place and does it quite bravely, coming forward with no less than 1,690 cases. It flourishes extensively among the weavers of Soochow. So common is it among this class that Mr. Marshall, who has charge of the clinical desk devoted to external diseases, claims that he rarely has to ask the occupation of a person when he sees he has the itch—he sets him down at once as a weaver. Why it prevails so extensively among this class I do not fully know."—*Park, Soochow,* 1887.

"Malabar itch and Chinese itch are nothing more than ordinary scabies."—*Scheube, p.* 553.

to rule, and responds readily to treatment, of which sulphur ointment may be made the base, with frequent advantage from one or more preliminary Jeyes' fluid hot baths, and clothing sterilisations (boilings.)

"The treatment of scabies aims essentially at opening up the burrows, destroying the acari, and allaying the itching. The best way is to make the patient soak in a hot bath for a quarter of an hour, then scrub himself with soft soap, using a nail-brush for the hands and feet. After washing off the soap the sulphur ointment of the pharmacopœia is rubbed all over the skin, except the face, and left on for three days. The patient then has a starch bath to allay the irritation and applies boric ointment to any patches of dermatitis which may be present. It is important not to use any sulphur after the third day, otherwise an unpleasant degree of eczema or artificial dermatitis may be set up which will cause great itching. In place of sulphur, B-naphthol in 20 per cent. ointment may be rubbed in after the bath and again on the three following days. It has the advantage that it is odourless and cleaner than sulphur, but it is not so efficacious. The same may be said of balsam of Peru, and the

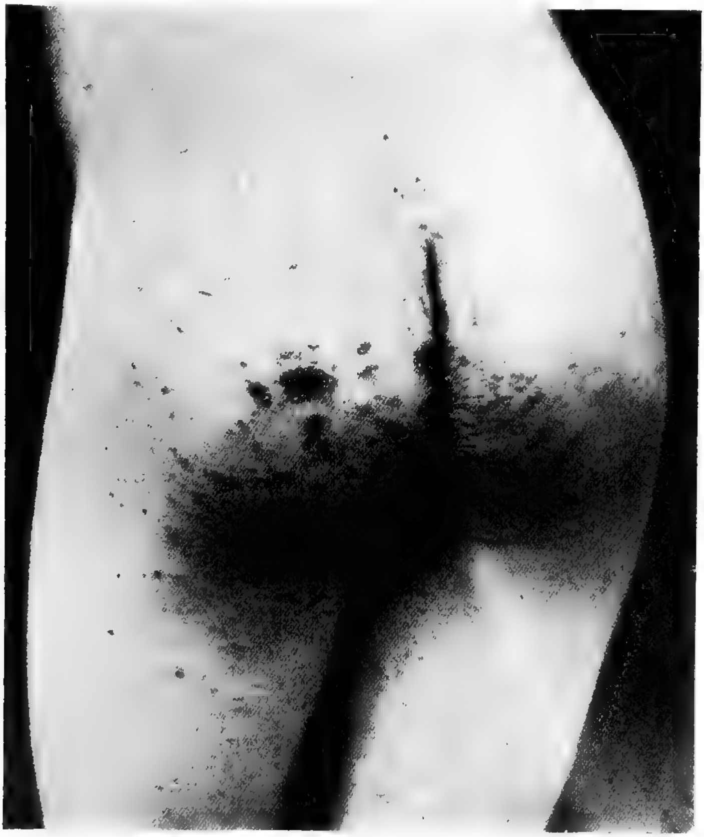


FIG. 167.—Scabies showing a favorite seat of the disease. (*Van Harlingen's Diseases of the Skin.*)

writer prefers to order sulphur. In any case, the clothes must be disinfected and the patient kept under observation for ten days to make sure that all ova have been destroyed." *Bunch in The Lancet, April* 3, 1909.

"**Parasites.**—The two of interest which came under our notice were the distoma ringeri and rhizoglyphus parasiticus. The latter was found by myself for the first time in this colony which adds to its interest as far as we are concerned. It is a somewhat unknown parasite and not mentioned in any of the standard works on tropical disease and is known as the "water itch." It occurred in three cases here, all on the feet, where it gave rise to superficial ulceration with a tendency to formation of burrow. The parasite is not very easily found as they are not numerous. An illustration appears in Max Braun's work *Die Thierischen Parasiten des Menschen*, and an account of one of our cases was illustrated in the *British Medical Journal* of November 11, 1905." -*Hongkong Health Reports*, 1904.

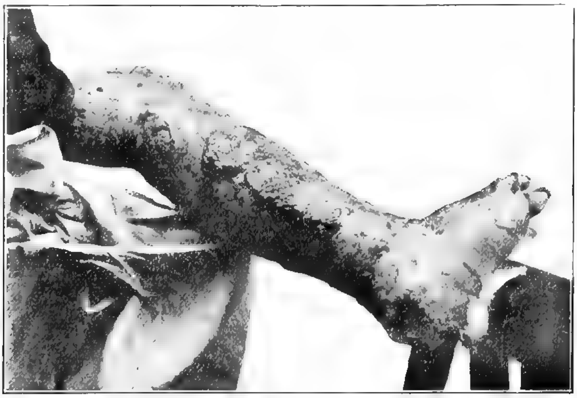


FIG 168. -Simple leg ulcers following old lime-burn. (*By Jefferys.*)

Leg Ulcers.—One knows nothing of leg ulcers until one comes to China. The dollar-sized lesions which used to haunt us in the home dispensaries are child's play to the ulcers of China. Leg ulcer is sometimes an all-too-appropriate name, when one finds practically the whole leg an ulcer. Such a condition is that seen in Fig. 168, the result of a lime burn received by stepping into a vat of lime five years previously. Probably every form of leg ulcer known to man is found in this land, and a thorough knowledge of the subject and ability to differentiate is essential to dispensary practice. If one cannot recognise gumma from varicose ulceration and tubercular disease from either, and simple ulcer, as in the figure, from all the rest, and so on, one will waste much time and medicine and opportunity, and fail of the best results. It is remarkable how little we find on this important subject in any text-book, and it is only in occasional articles that someone tells us what may be known on the subject.

Under the head of Ulcers we should mention a form of ulcer of the leg, destroying skin, subcutaneous tissues, fascia, muscles, tendons, vessels and even bones, observed in Chungking. The ulcer is round with deep margins, "the edges a little infiltrated, the ground covered with dirty looking, badly smelling sloughs," under which are reddish granulations which bleed readily. There is apt to be œdema of the surrounding parts. Assmy, the observer, makes this out to be the same condition as that described by Lenz, Bagamoyo, in the Muencher Medicinische Wochenschrift, 1908, No. 39. The condition has several organisms associated in it, a *fusiform bacillus*, a *short bacillus* and a *spirocheta.* These were all found in Assmy's case. The two names **phagedænismus tropicus** and *ulcus tropicum* have both been given to it, but the former is the preferable, the latter being left to the well-known *tropical ulcer* caused by the Leishman-Donovan bodies, an entirely different pathological entity.

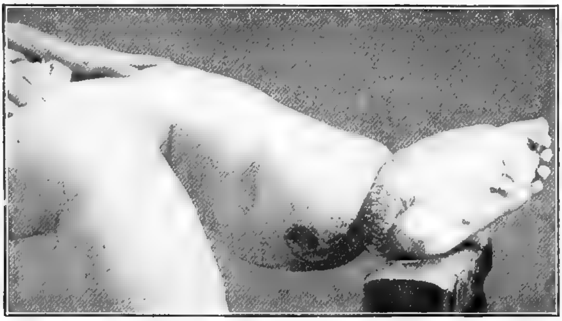


FIG. 169.—Leg ulcer in old elephantiasis. (*By Jefferys.*)

The majority of leg ulcers are probably **gummatous,** with varicose a good second. The former absolutely require specific treatment; the latter as absolutely require either pressure or elevation. To undertake the cure of a large chronic varicose ulcer in an ambulatory patient is an almost hopeless task; but with rest, elevation, pressure as a basis and other measures as adjuvants, much may be accomplished. It is usually best to put these patients to bed for a longer or shorter period with the part so confined as to prevent its being walked on, and to discourage any attempt to do so. A good plan is to require the signing of a contract to remain in hospital for a definite period. Otherwise, before final healing, the patient will invariably insist on leaving.

For the final healing or for necessarily ambulatory cases elastic bandages are admirable substitutes for elevation. These are made of cellular cloth or flannel. Wilkinson of Soochow calls attention to the proper use of the flannel bandage:

"In calling attention to this mode of treating leg ulcers, I will say that the material was first brought to my notice by McBurney of New York. I prepare the bandage in the following manner. Select flannel as free from cotton as possible; then take one corner of the end and bring it across the width of the cloth until it comes exactly even with the opposite side, thus making a right angle to the body of cloth. Press the bias fold and with a pair of scissors cut the cloth along this fold into strips of the required width. This gives the full elastic effect of the flannel, which is important. I have found by experience that 4 inches is the best width, since after the bandage has been washed several times it shrinks. Special care has to be taken to keep the cloth on the angle gotten by the above method, for the nearer across the flannel the bandage is cut the less elastic and more useless it is. The bandage is to be put together by laying one edge flat on the other and stitching carefully, so as to make it as smooth as possible. I find it more convenient to make it up in long pieces. Then when using it on any given case I can easily cut it off, after having bandaged properly and allowing for the shrinkage which follows washing. The greatest care has to be observed in washing the flannel. The temperature of the water ought to be the same throughout the washing, not allowing the cloth to become chilled in changing the water. Good soap and soft rainwater is best, and it should be washed in changes of quite warm water and soap until all the spots are washed out. Then wring as dry as possible, not to injure the cloth, and before hanging out to dry take the bandage in the hands and stretch it as wide as possible throughout its whole length. When dried, after having been thus stretched, it preserves nearly all of its original elasticity. I usually wait a few days after a new patient comes before using the flannel; first, to see if he intends coming on, and is in earnest; and second, to get rid of the worst of the odor and filth with hot water and soap. In this way I lose very few bandages by patients coming a time or two and then not returning.

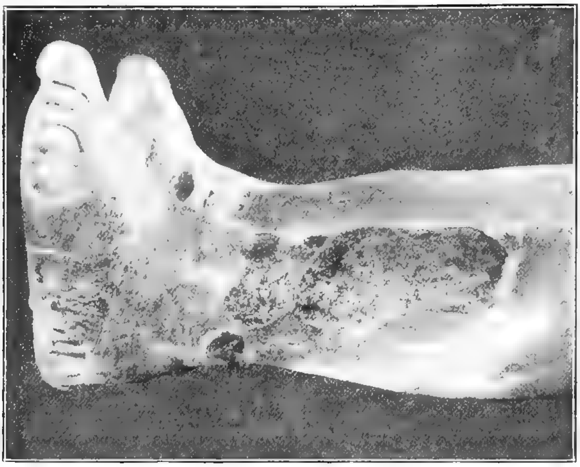


FIG. 170.—Leg ulcers in leprosy. (*By Jefferys.*)

"The patients that I find most helped by this form of bandaging are: first, those of long-standing ulcers with all the tissues swollen and engorged and the old granulations, where there are any, œdematous; second, those whose veins are weak and giving way by the long strain on them and those whose veins have gone a step further and have reached a varicose condition; third, those cases of from three to any number of years' standing where the base of the ulcer is very much lower than the surrounding skin, (for such ulcers will never heal until the skin and base of ulcer have gotten again on the same plane), very hard and rather cicatricial; fourth, those cases where the base of the ulcer has become so hypertrophied that it stands entirely above the level of the surrounding skin (unless they are small and nodular, in which case I usually put a piece of zinc cut, so that when placed under the bandage the pressure will be directly upon the nodule).

"I find that the more I practise putting on those bandages the more effectual they are. In putting them on I draw them steadily and as tight as the patient can well bear. It is always better to begin with the first turn below the ankle and give the ankle a good firm support. Just *above* the ankle one should be careful not to draw the bandage *too* tight, but as you get higher and higher along the belly of the muscles of the calf you can put on considerable force until you get beyond the calf, then *very* gradually lessen the tension until you are ready to put in the pins. I have learned never to change the tension of the bandage abruptly, for in so doing one aggravates the very conditions that one hopes by its use to remedy.

"The bandage is warm in winter, and in summer it admits of free ventilation, and the patient does not complain of the heat after the first day or two. It is elastic, and the patient's muscles have easy play in walking, thus permitting easy and rapid return of venous blood. By using some judgment and care in selecting cases, and by attending to the washing of the bandages oneself, the expense will be found to be inconsiderable. I have bought all wool flannel at Shanghai at from 30 to 50 cents per yard."

An excellent form of bandage for use in China is known as the Bender bandage, made of an elastic cotton mesh and, though neither durable nor cheap, still the best material we have yet tried.

The most modern treatment of varicose ulcers, when the part cannot be elevated and put at rest, as is often the case, is by putting on a fixed dressing of layers of gauze bandage impregnated with Unna's paste made up with pure gelatin, of the consistency of soft rubber when dry. The following is the procedure:

Wash the part clean and dry.

Make the paint liquid by standing in very hot water.

Paint the ulcers and surrounding parts.

Dry.

Neatly put on layers of bandage and paste to form a cast.

Leave on for three or four weeks.

Excellent results may often be obtained by this treatment, one application of which will often result in the cure of even long-standing ulcers.

For the smaller **varicose ulcers,** cross-strapping with z. o. plaster, after perhaps preliminary curetting or incision, will usually prove curative; the plaster being changed as often as it loosens. With the larger, the same measures, plus rest in bed, elevation and general measures of diet and hygiene are required.

General Rules for Ulcers.

1. Diagnose the particular form of ulceration.

2. Individualise the case, noting the general condition and the special symptoms and causation.

3. Invariably treat the constitutional dyscrasia: tubercule, syphilis, leprosy, malaria, venous stasis, etc.

4. Make the first local treatment radical.

5. Change the dressings as infrequently as possible and do not meddle with the healing ulcer.

The whole subject of **skin grafting** is of importance in the practice of surgery in China, where large tumours must be removed and extensive ulcerations covered. Various forms of skin grafting should be studied with care, that one may become proficient therein. They are all applicable, though we have had the best results ourselves from the larger Revirdin grafts. The lime-burn case below referred to was completely covered by such. The objection thereto is that they make a thin covering and tend to gangrenous degeneration at a late period in their growth, as reported by us in the *China Medical Journal* for April, 1904. The mistake is usually made of placing too few grafts and of using antiseptics where merely protective sterile dressings are indicated.

The following case of skin grafting represents what many surgeons are doing all over China, a very useful, widely applicable, and generally satisfactory factor in the practical routine of most of us. It offers no salient features, but on the contrary is a very ordinary and everyday affair, and is presented on that very account.

The patient was a boy of twelve years of age, in poor health, and presented himself in our clinic unable to walk and suffering from three large ulcers on the right leg; two covering most of the external aspect and being the result of an extensive lime burn received five years previously. The third ulcer was smaller and under the heel, and we judged it to be a pressure sore of long standing. The whole leg was eczematous and foul beyond description; the ulcers, as is often seen, were covered with brown paper stuck fast and simply rotten. The condition of the leg on removal of the paper, etc., is shown in Fig. 168.

Following our rule in such cases, the patient was put to bed, the foot raised, patient put on tonic treatment and fed to the utmost, and the leg put through two weeks of cleansing and other treatment preparatory to skin grafting. When the eczema had entirely subsided and the ulcers became healthy and sweet and all tendency to bleed had disappeared, some thirty grafts were transplanted from the patient's arm and an aseptic dressing applied. (Strips of oiled silk, interlaced and

> "If hair is present it should be shaved or removed with a barium sulphide paste such as the following: Barium sulphide, gr. xij; powdered soap, gr. xv; starch powder, gr. xv; and benzaldehyde, ʒj. In order to avoid the possibility of a resulting dermatitis the paste should not be applied for more than five minutes and then washed off."—*Galli, Valerio and Rochaz.*

covered with one thickness of gauze and plenty of cotton.) The first dressing was not removed till forty-eight hours had passed, after which it was dressed daily.

About two-thirds of the grafts took hold, and their growth was rapid and quickly covered the large area, aided by the marginal growths which proved considerably more than is usual in an ulcer of such long standing.

The patient was dismissed at the end of a month after the operation, cured and able to walk easily, in spite of a slight contraction at the knee-joint which was present on admission, largely due to having walked on one leg for years and held the other leg up, also partly due to old contractions.

We have seen the patient since, some months after discharge, for another ailment and were glad to find that the skin grafts had not broken down except at one point. In this connection we have several times had grafts break down, either from traumatism or from late infection. This latter has shown itself in the development in spots of a superficial moist gangrene of a delicate green color and which, we suppose, as it has happened three times in our wards, is due to a special saprophytic micro-organism. The process can be at once arrested with a weak solution of nitrate of silver, but this will also destroy some of the grafts and should therefore be used with care. If the gangrene gets a good start it will either destroy all that has been done or at least leave a large ulcer or two in the grafted area. In this case we would advise using some such local application for the ulcer as bichloride of mercury in glycerine, 1–500 (we owe this prescription to Reifsnyder's clinic in Shanghai) applied on gauze to the ulcer itself, not beyond, till it builds up again to the level of the rest of the part. The contraction following this operation is much less than that which results from ulcers which are forced to do all their healing from the edges and of course much time is saved. Still there is in some cases a great deal of contraction which in certain places on the leg and arm may give rise to interference with the circulation.

The best immediate dressing for all kinds of skin grafts is rubber gauze (gauze soaked in a solution of rubber and dried).

We may mention now certain of the skin affections which are, at least **in a measure, peculiar to China,** or which have been noticed as appearing in specially interesting forms among the Chinese.

Yaws (See Chapter V).

Tinea imbricata is a form of skin ring-worm confined to hot countries. Its distribution in China is difficult to arrive at, and we have no sufficient data to go on. It does not extend in a northerly direction further than a line parallel with the north point of Formosa, but is probably found with some frequency south of the tropic of Cancer. In South Formosa it is a fairly common disease, and we are never long without a case in the hospital in Tainan. There appears in Formosa to be decided racial peculiarities in the matter of infection, for while from time to time we have Chinese coming to us suffering from the complaint, at least eight out of every ten patients are from the Hakka Village of South Formosa.

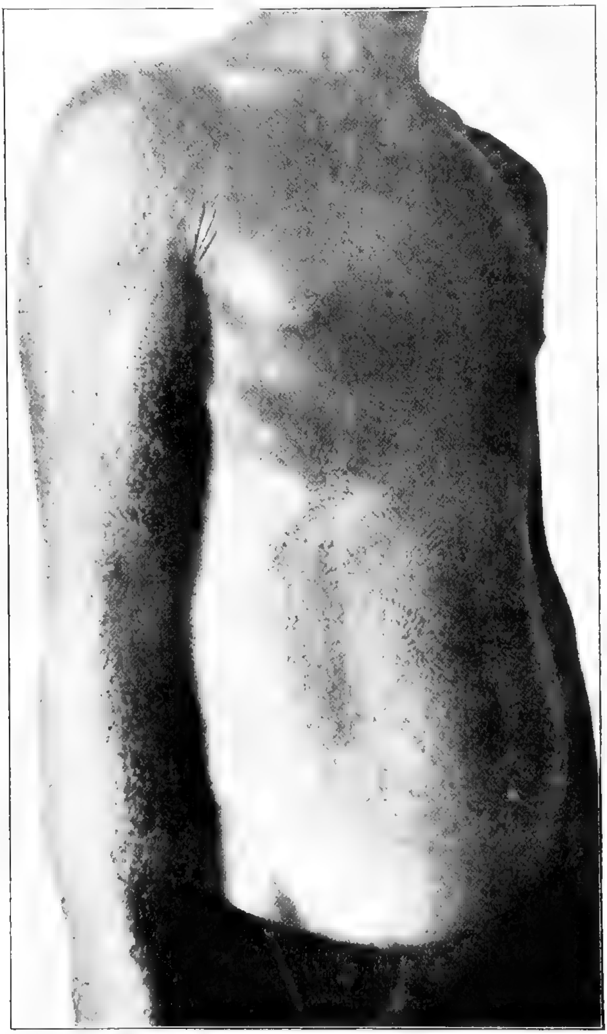


FIG. 171.—Tinea imbricata. (*By Maxwell.*)

"Strictly confined to warm climates * * * it has been found to extend * * * northward as far as Foochow and Formosa on the coast of China."—*Manson, p.* 773.

"In China (Amoy) Manson also observed the disease, but almost solely in persons who had immigrated from the Straits or Malaya."—*Scheube, p.* 526.

Ætiology.—The cause of tinea imbricata is a trychophyton-like fungus, the spores and hyphæ of which can be seen in great quantities in the infected epidermal scales.

Clinical Picture.—The patients, always in our experience men, present so characteristic an appearance that once seen the disease can never be mistaken for anything else. The face is never affected, any or every other part of the body shows the condition so well marked in the accompanying photograph. In early cases the disease is seen in perfectly circular lesions from half an inch to a foot or more in diameter. The smallest lesions show a single ring of epidermal scales which apparently are fixed to the skin at one edge, the other edge being raised and free – hence the name. The larger spots show the same circular arrangements indefinitely multiplied and running into each other, but always retaining more or less of the circular arrangement.

"In Amoy, which is not very hot, Manson's patients were only troubled slightly by itching."—*Scheube, p.* 528.

Treatment.—This is simple and effective, but requires to be persisted in till the whole lesion is completely cured, or else fresh disease spreads from the incompletely healed spot.

The following is the method of treatment we adopt:

The patient is told to provide himself with a loofa (the dried interior of a cucumber) and a piece of soap. Each night the whole of the affected area is either painted with Tinct. Benzoini Co or rubbed with an ointment of Ac. Chrysophanic ʒj to vaseline ℥j. In the morning the patient washes himself with hot water and thoroughly scrubs the whole affected area with the loofa and soap, thus removing all the loose scales. If this treatment is adopted every day the disease is easily cured within a fortnight *J. L. M.*

Pemphigus contagiosus.—"This ailment principally attacks children, is very frequent in South China, the Straits Settlements, Madras, and probably occurs all over the tropics."—*Scheube, p.* 579.

* * * "Is very common in South China during the hot weather; in some years it may be described as being epidemic * * * European children are more prone to it than native children."—*Manson, pp.* 756, 757.

Local Diseases of Uncertain Nature.

Craw-craw.—"It, or a similar disease, is by no means confined to Africa, for I have seen it in patients from India, and was at one time very familiar with it in South China."—*Manson, pp.* 795, 796.

Tropical Sloughing Phagedena.—* * * "Has been observed in almost all tropical countries of the Old and New World. There are reports as to its occurrence * * * in China." * * *—*Scheube, p.* 544.

* * * "Is common in most tropical countries, particularly in those with a hot, damp climate. These sores are often named after those districts in which they are specially prevalent." —*Manson, p.* 752.

In the *China Medical Journal* for July, 1907, we reported the first case in a Chinese of **Xeroderma pigmentosa,** as follows:

Case I is, we believe, the first case of Kaposi's disease reported in a Chinese patient.

Wong Loi-tsao, male, aged fourteen years, Chinese, son of a rice merchant in this Shanghai district. Parents well, other children in fair health.

The patient has been in our wards three times, at intervals. The first visit was in the summer of 1905, the second in the autumn of 1906, and the last from March 17 to 22, 1907. The first visit occurred when we were out of town.

The first visit was for a certain morbid condition of the skin, the second visit for a small tumor interfering with the drainage of the left eye, the last visit was made *in extremis.*

When we first saw him, October, 1906, the patient was undersize, poorly nourished, thin, and even weak in his movements. His muscles were flabby, and the word marasmic might well have been applied to his case. Stools showed pure culture of numerous unfertilized ascaris eggs. He was blind in the right eye, and a small ulcerating growth, arising at the root of the nose, interfered with the drainage of the left eye, in the conjunctival sac of which considerable muco-pus was constantly present. It was from the tumour and its anticipated effect on the sound eye that the patient desired relief at this time.

But, from the medical standpoint, the most noticeable thing about the patient was the condition of the skin. It was dry and slightly scaly all over the body. This was particularly noticeable about the ears, the auricles of which were almost shrivelled, and felt like the uppers of an old pair of shoes, looked like them, too, more or less. The forehead and corners of the mouth were deeply lined, somewhat as in hereditary syphilis. The bridge of the nose had caved in, and a small tumor, like an exuberant granulation, was growing from the nasal root. This was later curetted and a sinus track found to lead into the frontal sinuses. The whole upper part of the body was covered with brownish to blackish macules, pinhead to pea size; the higher up, even on the scalp, the darker the color, and, according to the father, the older the lesions, this condition having appeared when the boy was about five years old and first on the face and slowly progressed to the present day. Between the macules was the natural dark skin of a rather dark Chinese, but about the head there was very little "between." The pigmentation was dark brown on the neck, arms, and chest, but from about the umbilicus down the macules, instead of being brown, were bleached. These white spots were of the size and shape of the black ones above, but there were no black spots below the waist. The photograph shows very poorly the condition about the knee-joint. It corresponds to the condition of our patient when we first saw him. These white spots were slightly depressed, but only very slightly so.

There was a slight eczema over the cheek bones, and the patient complained somewhat of general itching of the skin. The most affected parts of the skin were the ears, the forehead, and the cheeks.

There was some catarrh of the nose and the teeth were bad.

The right cornea was the seat of keratomalacia and that eye was blind. This was of about a year's standing.

At this time the tumor was thoroughly curetted away and the left eye improved. The patient was put on antisyphilitic treatment, and this was pushed. He stood it, but did not improve in any perceptible degree. Tonic and supporting treatment was also resorted to, but without effect. We had not then recognized the disease.

Third Visit.—On March 17, the patient was carried to the hospital *in extremis.* He was excessively weak and anæmic. His skin was drier and more shrivelled. He could still see out of the left eye somewhat if he lifted with his hand a large boggy tumor of the forehead that hung pendulously closing the lid. The nose was almost ulcerated off and the granulations about its root had reappeared and spread to the inner canthus. The nostrils were occluded with the congested mucous membrane. On slight pressure over the forehead, which bulged forward about 2 inches in a dome-shaped mass, pus would overflow from the region of the frontal sinuses.

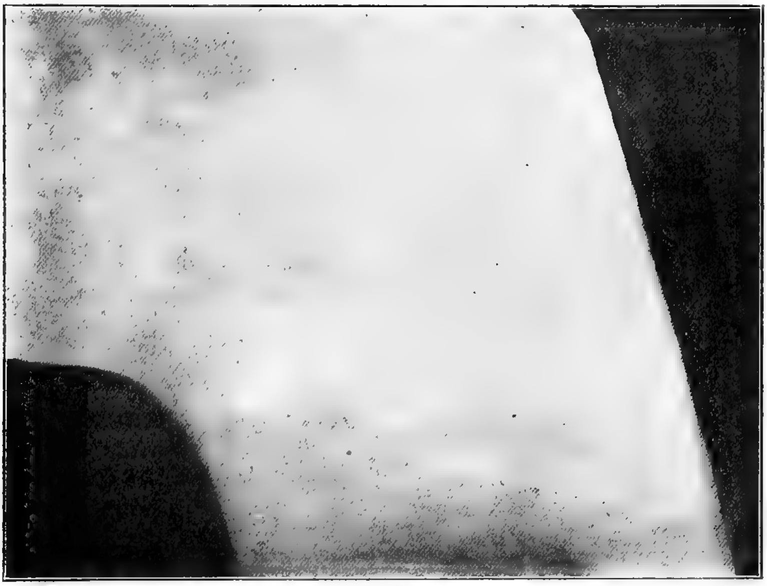


FIG. 172.—Atrophic spots in Kaposi's disease. Case reported here. (*By Jefferys.*)

In order to give the patient relief, we decided on the twenty-second to open up the mass and drain it at least. An incision was made 6 inches across the line of the eyebrows and the skin of the forehead turned back. The outer table of the skull was almost ulcerated off and came away, leaving a vascular and friable mass beneath. Bleeding was so free that we had to go on and clean the thing thoroughly. The upper nares was opened up by the growth and the meninges exposed through an ulcerated opening an inch in diameter through the inner table of the skull. This huge cavity was packed with gauze and drained and the skin flap partially approximated. The patient died of shock half an hour later. No post-mortem allowed, as usual in China.

Cultures from the pus in the frontal sinuses gave a profuse growth on blood serum in forty-eight hours, chiefly a large rod, taking stains poorly methylene blue, eosin, gentian violet.

Stanley (Shanghai Municipal Health Officer) reports the tumor as follows:

"Sections presented the appearance of tubular carcinoma, with patches of cell necrosis."

There is no possible doubt about the diagnosis in this case. It presents all the regular and typical characteristics of Kaposi's disease, which Grindon defines as "a rare, chronic, fatal disease, beginning in infancy, characterised by freckling, atrophic spots, telangiectases and keratoses, and later by development of carcinomata and sarcomata."

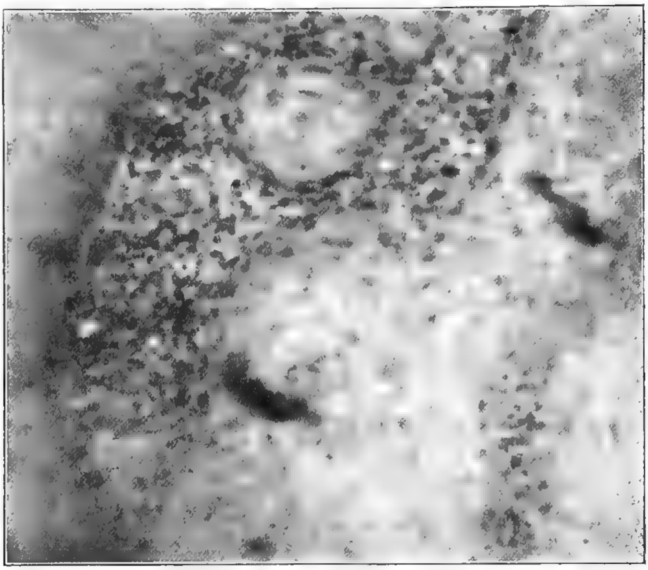


FIG. 173.—Tubular carcinoma developing in the last stage of xeroderma pigmentosa. Case reported here. (*By Jefferys.*)

The pathology of this rather rare disease appears to be still unknown, and it others have not been able to make it out with post-mortems, we certainly cannot do so without them. But the impression that one gets from this case is a general sense of kinship between the disease and other degenerative states which depend for their causation on the pathological condition of one or other of the ductless glands. And we rather expect that when the day does come, some one of these structures will be found absent or degenerate.

In the same issue of the *Journal* we reported another condition, as follows:

CASE.—Woman, aged forty-five years, farmer's wife from the Kiangpeh (north of the Yangtze, in Kiangsu province). Married and has three children, nine years old and over, all in good health. Husband had some venereal trouble (unknown nature) and also the same disease as that from which patient is suffering, but it finished its course about the time she contracted it. This was six to seven years ago (perhaps five years). Except for the disease complained of, patient is in excellent health and has been so for years past. No other complaints can be elicited. No cough. Digestion and appetite good. No history of miscarriages. Patient is rather large and well-built. Has considerable adipose tissue and well-developed muscles.

The present disease began some six years ago with slight pain in the right arm, rather deep, followed by the slow development of a couple of lesions (described later), which finally ulcerated and then healed with scarring, stellate, and about the size of a silver dollar each. These are still quite perceptible, but are soft to the touch and whitish in color. From that time on this process was repeated at various points on the back, shoulders, and less so on the abdomen, and has continued to repeat itself to the present time when there are some ten or twelve active elevated pustulo-tuberculous lesions well crusted over and an almost continuous sheet of cicatricial tissue over the shoulders, back, and buttocks, with some isolated lesions and scarred areas on the chest, abdomen, and several active lesions on the high forehead, as well as some scarring. These itch slightly, but do not pain. There are no signs of scratching.

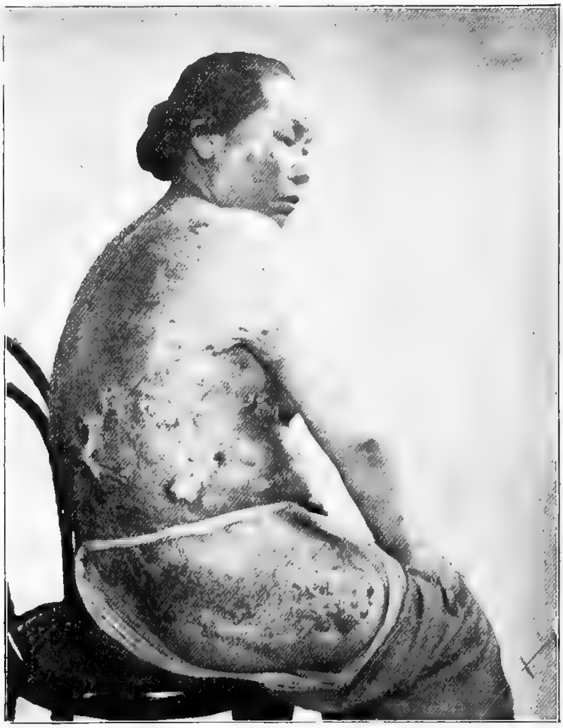


FIG. 174.—Condition described. (*By Jefferys.*)

The cicatricial tissue has some distinct characteristics. It is apparently much ridged and very uneven, but for the most part is exceedingly soft and velvety to the touch. In some places, as at the posterior axillary fold, it is thrown into ridges and folds, as if by bands of scar tissue, but even these are yielding and pliable. In many places there are peculiar slanting depressions or umbilications or quiltings, but they seem to all slant somewhat, not point straight in. Thus a small fold of skin fits over them as a sort of valve. In several places, where active lesions are present, there is a real keloid ridge. The largest of these is near the dorsal spine. These are reddish in color and firm, but otherwise the cicatrices are whitish and soft. The cicatricial skin is everywhere freely movable, not adherent to the subcutaneous tissues. There is no staining whatever as from healed gumma or syphilitic rupia. The lesions, moreover, are not gummatous in character.

The lesions are, at present, large, crusted, and granulomatous in character. A yellowish-green crust seals each completely which, when removed, reveals a few drops of mucoid pus. This in turn when wiped off reveals a red, rather healthy-looking granulating ulcer, raised above the surface about three-eighths of an inch and about the size of a twenty-cent piece in area. It is not possible to mark the place of long-healed lesions unless it be the umbilicated points. This is quite likely, though there are none on the arm, the seat of the original lesions. There is no relation to the hair follicles or skin glands.

The Pus.—Several smears, from two lesions freshly unsealed, showed many polynuclear leucocytes in good preservation, that is no detritus, and two forms of micro-organisms, a rod resembling the Bac. Tub. both in length and appearance and in its angular configuration, but not so slender, and easily decolorising with acid. It stains faintly with methylene blue. These are present in small numbers. There is also an encapsulated diplococcus, staining deeply with methylene blue, small and perfectly spherical. It is not any of the ordinary pus cocci. Some groups of fours were found and larger groups, but multiples of two. Grown in beef bouillon, proved unsatisfactory. Diplococci larger and somewhat flattened on one side, some staphylococci and streptococci probably contaminated the culture.

There is one acneform pustule on the left cheek.

The patient also shows a marked and typical lupus erythematosis of the nose and cheeks, a well-marked butterfly. This affection, by itself, is quite common in China.

Differential Diagnosis.—*Syphilitic rupia* is usually associated with marked debility and malnutrition. In this patient there is no discoloration, the general health is excellent, there is no history of other eruptions. No gummata. Legs not involved. The history is too continuous.

Lupus Vulgaris.—No t. b. found in the pus. The lesions are much larger than the ordinary lupus lesions, and there are no small scattered tubercles. No pain. The distribution is so general that impaired health would be a likely accompaniment. The scarring is too soft and pliable. It is not present on the face. The self-termination of the disease in the husband and the advanced age of the patient rather against lupus. The lupus erythematosis rather for it.

Lepra.—The patient has not one symptom of lepra and the particular areas of leprous distribution are entirely avoided. Again, the husband recovered and is in good health. (We have not seen him.) The hands and feet are in excellent preservation. The lepra bac. not found. The expression not characteristic, though this woman's face is rather heavy looking.

Epithelioma and psoriasis, also ecthyma and sycosis may be at once excluded.

We are not able to classify this affection as belonging to any of the regular granulomata, nor yet would it be safe to place it in a class by itself as a specific entity.

The present disease appears to be a benign and very chronic affection of the epidermis and corion of unknown specificity, characterised by the slow and widely distributed development of large pustulo-tuberculous lesions, which tend to heal spontaneously with the excessive and characteristic scarring above described.

Since the reporting of this, two other typical cases of the same disease in Chinese have been reported and the subject discussed at some length. One of which we have photographs was sent us by W. E. Plummer, of Wenchow, who gives the history as follows:

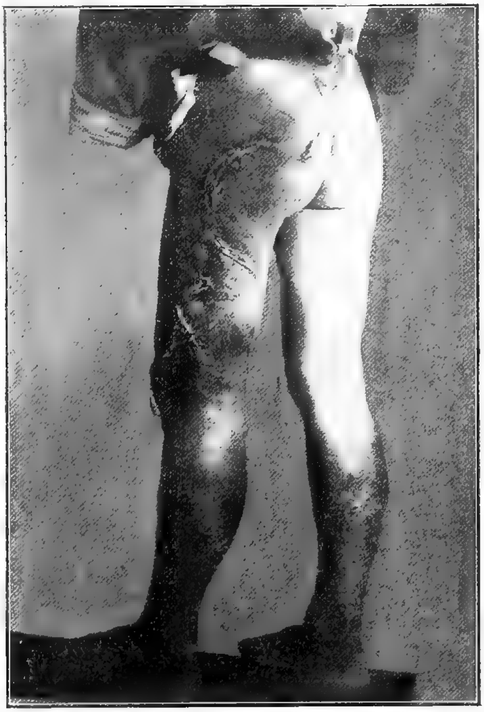


FIG. 175.—Same condition. Second report of a case. (*By W. E. Plummer, Wenchow.*)

"The patient was a healthy-looking, well-nourished man, forty-one years of age. The ulcers began when he was sixteen years old, that is, twenty-five years ago. They first appeared on the buttocks, and have been active ever since, healing in one place while spreading in another. His wife is well and has never had similar trouble. Five years ago a daughter was born, who died two months later; there have been no other children.

"On admission.—The disease is limited to the buttocks, thighs, and legs; elsewhere the skin is healthy. The ulcers are mostly linear in shape with raised edges, or rather the whole site of the ulcer is raised and the skin around is puckered as if drawn in by the contraction of connective tissue; some of these ulcers are continuous with linear scars, showing the former site of ulceration. In front of the knee the sore has healed, in the centre and on the buttocks the raised edges of the skin have almost met and effected healing. The granulations are glazed. On the back of the calf are ordinary looking ulcers without the raised, puckered edges.

"**Treatment.**—Potassium iodide and mercurial ointment were first given a trial, but as no improvement was observed the ulcers were scraped, under chloroform. Under the soft granulations was a firm fibrous tissue, such as is met with in most cases of tubercular skin disease. After operation healing commenced, but the patient left at the end of ten days, so the ultimate result cannot be stated.

"I have not seen a case like this before, nor can I find a description in 'Mracek's Diseases of the Skin' which in any way tallies with the appearance of this patient.

"The way in which the granulations were scraped away, leaving a firm base of fibrous tissue, suggested a tubercular process in which there had been great resistance on the part of the body resulting in connective tissue proliferation, but the man's robust appearance made it difficult to understand how the tubercle bacillus could be the cause of his trouble.

"The patient called four months after leaving the hospital and reported himself as quite well and all the ulcers healed. He left the hospital shortly after the ulcers had been scraped, using boracic ointment dressings."—*Plummer, Wenchow.*

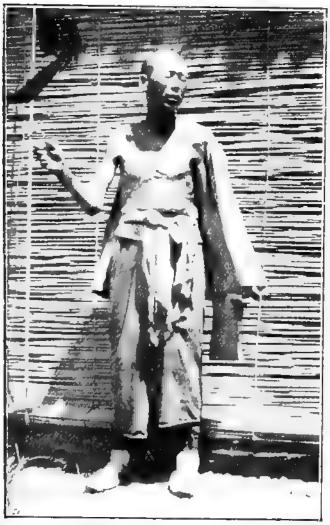


FIG. 176.—Same condition. Third report of a case. (*By Margaret Phillips, Pingyin.*)

The third case is reported from Pingyin, Shantung, by Margaret Phillips, the description tallying accurately, also the photograph:

"In July, 1907, Dr. Jefferys reported in the *Journal* a case of extensive pustulo-tuberculous ulceration and cicatrisation of the epidermis of unknown specificity. I at once remembered having seen at least two cases of the disease during my short stay here (both in men), but the language having hitherto required much attention I had to wait until another case should come to me. The case reported here presents clinical features closely resembling those of Dr. Jefferys' case, with one or two slight though interesting variations which may make it worth recording.

"The patient is a man, aged forty, a cattle dealer in the extreme west of Shantung. In the course of his occupation he naturally (in China) comes in contact with many diseased animals. He refuses to acknowledge any previous illness, saying that he has always had excellent health. He has never seen a case similar to his own. He is in fairly comfortable circumstances and lives on the ordinary Chinese diet here—grain (millet, wheat) and vegetables, occasionally meat (though rarely). He is of temperate habits and does not smoke opium. His present condition is good, though he is now, and always has been, a somewhat spare subject. He complains now of a slight degree of anorexia and irregular attacks of pain in the diseased areas of skin.

"The disease originated about five years ago as a small red papule on the left shoulder, which broke down and ulcerated, and then began to advance slowly across the chest; the older portions healing as new ones were attacked.

"His chest is covered in front with a continuous area of stellated scar tissue extending from the left supraclavicular region obliquely downward to the lower costal margin on the right side; the whole of the front of the chest being covered also to a similar point on the left side. The right arm is affected around the elbow-joint, above and below it. When the arm hangs by the side, the upper line of the diseased area corresponds with that on the chest. Below the elbow the disease completely encircles the arm. There is contraction of the elbow to 70°, and the biceps tendon stands out prominently as a thick red cord. There are active centres on the chest, at the left extremity of the affected area, extending round toward the back of the chest, also on the arm at the upper and lower margins of the scar tissue. There are no lesions on the face or legs, or in any other situation.

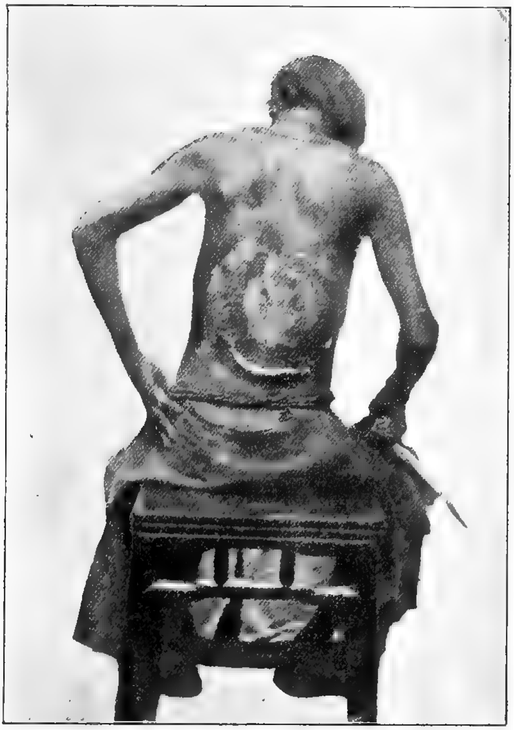


FIG. 177.—Same condition (probably). If so, fourth report of a case. (*By S. Cochran, Hwaiyuen.*)

"The active lesions consist of large red, slightly raised granulating ulcers, covered with a dry crust consisting of serum and pus with here and there slight hæmorrhages. There are no pustules and no vesicles. No scales are present, and there are no scattered patches. There is no itching or smarting, and no signs of scratching. There is no tenderness, but attacks of pain in the affected skin occur irregularly every few days.

"The cicatricial tissue is both white and red, slightly raised above the normal surface, smooth, shiny, and thin; in some places drawn into fine creases, in others the red raised cords show a keloid tendency. The effect is to produce a reticulated appearance of the whole of the scarry tissue. I noticed the peculiar slanting depressions that Dr. Jefferys referred to. This case seems to differ chiefly in the absence of any disease on the face and the reported occurrence of a certain amount of pain, though pain in the Chinese is not always a reliable symptom. A photograph is enclosed, not of much use except to show the general aspect of the patient and the contraction of the right elbow-joint. An active lesion is seen on the wrist and a large one on the left side of the chest. The cicatricial tissue, though covering the whole of the front of the chest, is only visible where keloid ridges are prominent. There is no better camera at present at my disposal, so a nearer view was impossible. I am build-

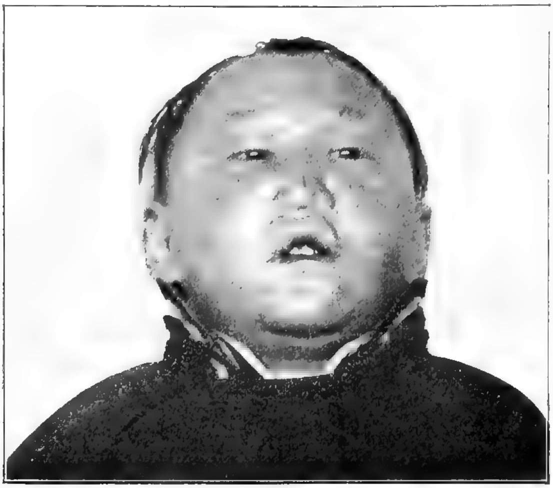


FIG. 178. -Complete closure of the anterior nares, following native inoculation for smallpox. (*By Jefferys.*)

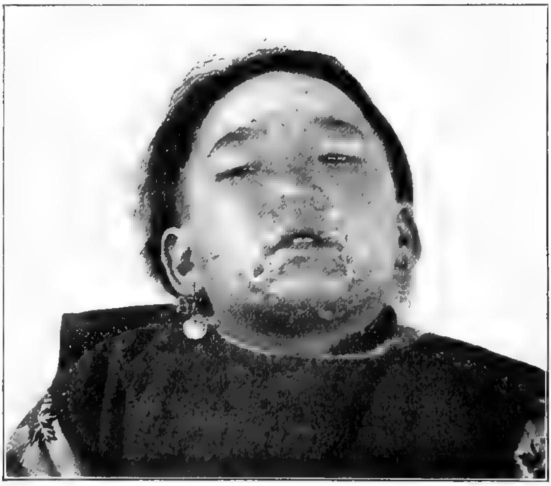


FIG. 178 *a*. Complete closure of the anterior nares, following native inoculation for smallpox. (*By Jefferys.*)

ing a hospital and dispensary, and being without assistance, have no time for bacteriological work. Failing to cure a disease of years at one sitting, the patient has naturally not returned, and it seems difficult to get in touch with him again, though I am still hoping to do so eventually. I have no suggestions to offer toward identifying the disease, except that the key to the solution probably lies in the study of the ætiological factors common to all such cases, especially occupation, sex, habits, and communicability or otherwise of the disease. In the case reported by Dr. Jefferys it would be interesting and probably illuminating to hear the history of the disease in the husband.

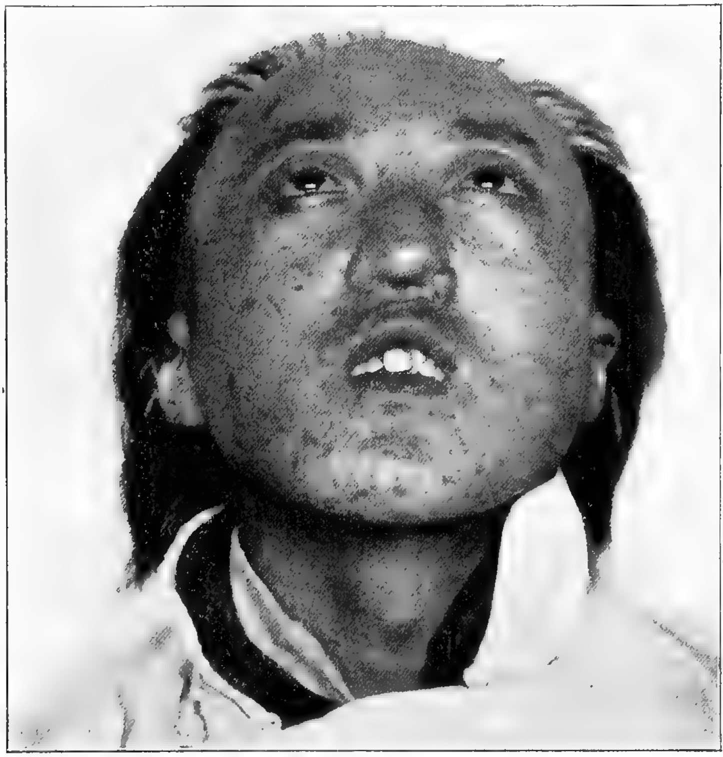


FIG. 179.—Complete closure of the anterior nares. (*By Jefferys.*)

I shall note with interest a record of other cases either privately or through the medium of the *Journal.* Were it only in the investigation of the skin diseases in which China abounds, the medical missionaries of China might find a life work."—*Phillips, Pingyin.*

Our present impression is that this is probably a blastomycotic infection and is a distinct disease entity, which we do not believe has been reported previously, and certainly has not been so in China. There is little use, however, in giving a name thereto until the causative parasite is described, pending which it may be referred to as **Dermatitis mollis sinensis.**

The skin in the Chinese race is thin, and when lost the subcutaneous tissues yield themselves readily to scarring, cicatricial formation, **keloid growth,** and so forth.

"In the black and yellow races *keloids* are frequently encountered."—*Scheube, p.* 580.

The case above reported is a typical example of this. The ready and extensive scarring after smallpox is another example.

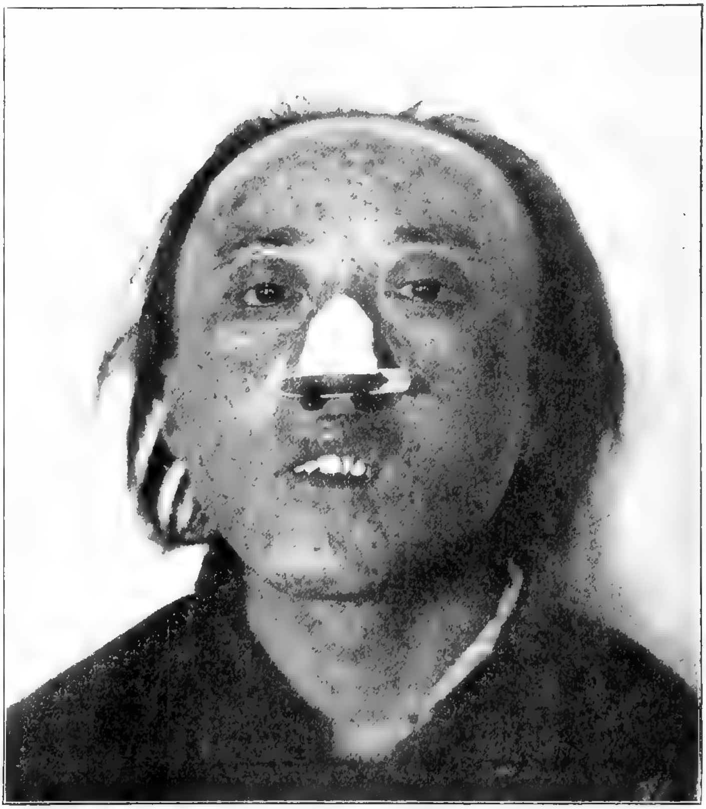


FIG. 180.—Method of dressing the same after operation for radical cure. (*By Jefferys.*)

The old Chinese custom of **inoculating the mucous membrane** of the nose with smallpox by insufflating the desiccated scab into the nostril, and so deliberately producing the disease in children, frequently results in so violent an inflammation and so **thorough a cicatrisation** as to completely block and close off **the anterior nares.** (See Figs. 178–9.)

"The form of inoculation most practised here is by inserting, by blowing high up into the nostril through a hollow sharp-pointed silver tube, the dried smallpox scab reduced to powder." *Main, Hangchow.*

There is usually a curious band of scar tissue passing from each nostril to the prominence on each side of the centre of the upper lip. The lip is drawn up and the mouth slightly opened, and this band which completely closes the nares may be only 1/8 to 1/4 of an inch thick. In other cases there will be found behind it a complete closure of the nostrils an inch or more in depth. The latter cases are extremely difficult of handling; the former comparatively easy.

We have tried various plastic operations for the obstruction. For the simpler condition it is sufficient to make a flap of the offending scar tissue with its convexity upward, to split it and remove the internal surface and then to tack it down on the floor of the nostril with a single stitch; this stitch is most easily passed, both ends, into the mouth anterior to the mandible at the root of the lip, tied in the mouth and the ends left long enough to be easily found; after which a drainage-tube should be worn in each nostril for a longer or shorter period, a safety pin holding the two drainage-tubes so that neither can slip in too far. In the more extensive condition, it is necessary to dissect out the scar tissue as carefully

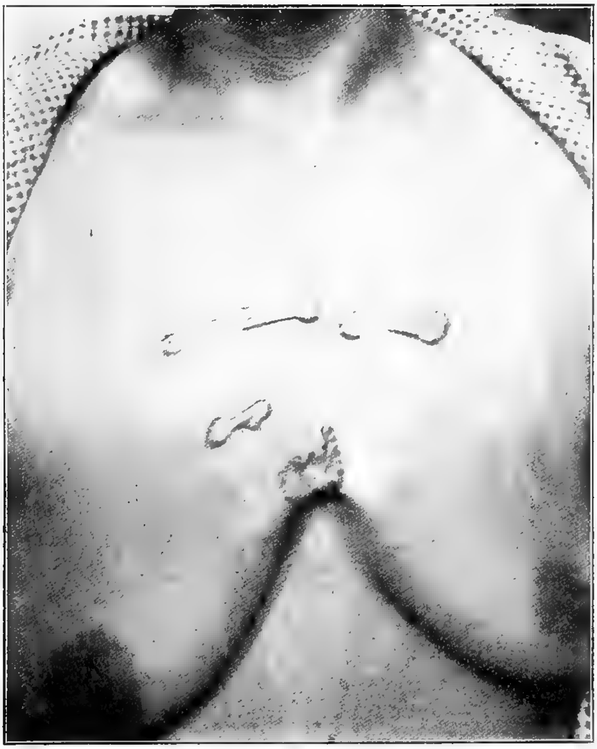


FIG. 181.—Painful keloid of the chest. (*By Jefferys.*)

as one can, to dilate the nostrils, to make a long, thin, skin flap from each cheek and tack these on the floor of the nose and then insert the drainage-tubes, as above described. The results are generally quite satisfactory.

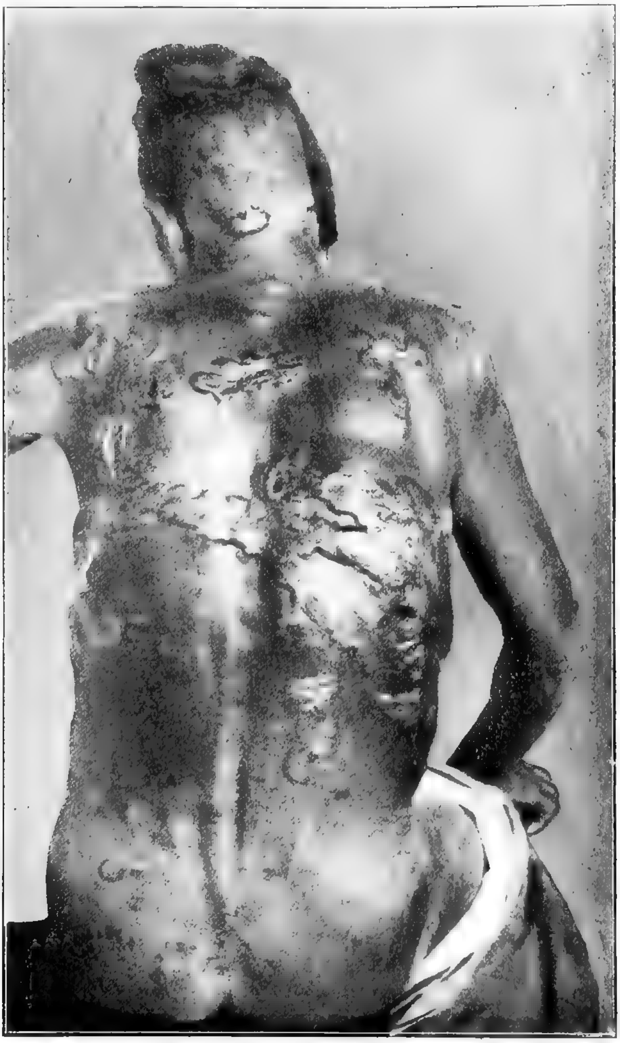


FIG. 182. True keloid. (*By A. W. Tucker, Shanghai.*)

A curious form of keloid appeared on the chest at the point where the breasts come together in the median line. The condition, which had existed for four or five years, grew in dumb-bell-shaped patches from a centre outward, perhaps healing at the centre and extending at the ends. Certainly the ends showed slight inflammatory signs and were extremely painful. The central patch between the two breasts was especially so. We suspected the possible presence of some causative parasitic body in the extending margin, though think it more likely that the condition was tubercular. The scar tissue was marked and the whole resembled true keloid. Operation was refused. (Fig. 181.)

Genuine keloid, the kind that we expect to see occasionally around a scar, especially in the coloured races, is found in China. A. L. Shelton of Batang, West China, has reported in the *China Medical Journal*, a particularly aggravated case originating in a Tibetan boy aged eighteen, at the point where the ear was pierced for earrings. It had grown for five years and occupied the entire left side of the neck as a large fungating sclerotic tumour.

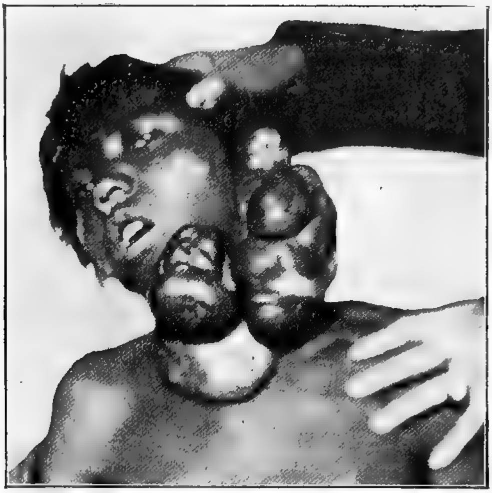


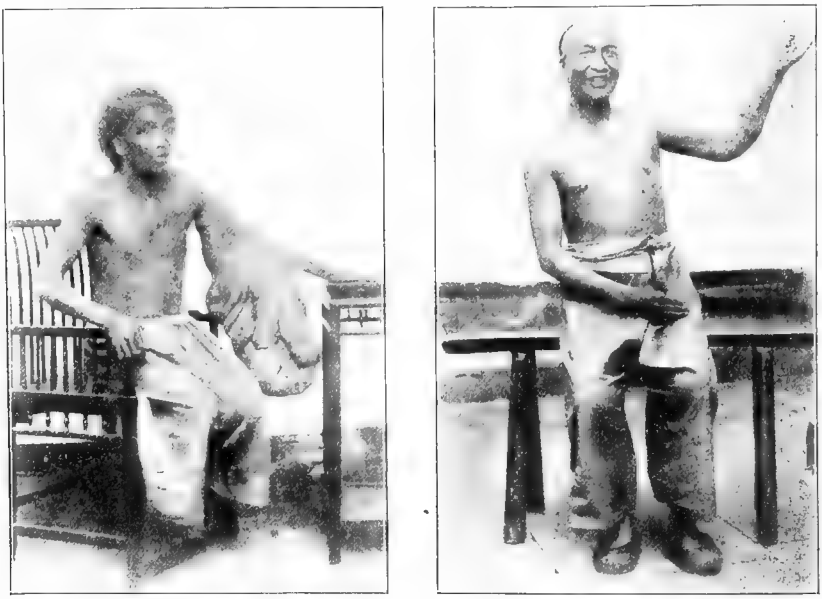
FIG. 183.—Keloid from ear-piercing (*By A. L. Shelton, Batang, W. China.*)

Mackenzie of Foochow has reported a most extensive case of **molluscum fibrosum** (*China Medical Journal*, July, 1908). The mass, which hung from the neck and the right side of the face weighed thirty-five pounds. (See Fig. 185.) The fibroid character of this affection should be noted in connection with the matter under discussion.

The pigmented skin of the Chinese race, as with the negro, is extremely subject to that form of atrophy which we know under various titles, but are most familiar with as vitiligo. Even in the lighter yellow skins, typically white or paler patches are frequently seen. In women especially upon the face and arms they are considered great blemishes, and treatment for them is often sought.

In men, who are apt to be darker skinned than women, it is frequently more marked but less resented. Arsenic by mouth is worth trying.

Symmetrical Vitiligo.—The case presented in the photograph is an extensive symmetrical vitiligo, or leucoderma. Both front and back the patient was symmetrically marked, so perfectly so that it seemed almost as if it had been done on purpose. The conformation of the areas, even to certain minute curves and spots, were closely similar. The two nipples were white; there were small unaffected areas symmetrically placed in the centres of large affected areas. The most extensive white area was about the pelvis and upper thighs, giving the appearance of bathing tights. If any doubt were entertained, such a case as this would persuade one of the nervous origin of the affection. Undoubtedly some trophic disturbance is responsible for the absorption of pigment. The patient was a coolie, and did not mind the condition in any way whatever.



Before operation. After operation.

FIG. 184.—Molluscum fibrosum. (*By C. C. Elliott, Paoning.*)

It is interesting to note that the leucodermic areas in a Chinese appear identical with the normal skin of the white races—well-nourished, pinkish, smooth and clean.

Occasionally Chinese are seen who have many of the characteristics of the white races, without any white parentage traceable—yellow, or light brown hair, blue eyes, fair skin, and so forth. These should not be confused with half-castes of various sorts, such as those found in Chusan and thought to be abnormal Chinese, but afterward found to be relics of former wartimes. Even true albinismus is seen, with the pink eyes and snowy white hair.

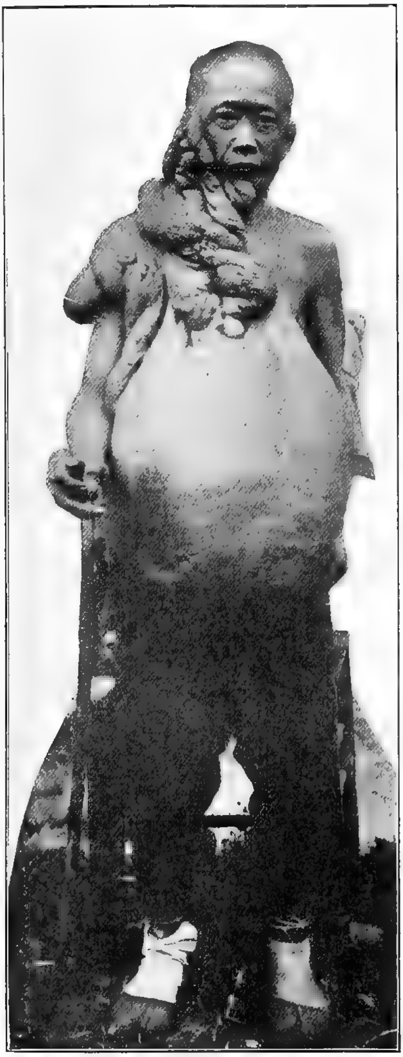


FIG. 185.—Molluscum fibrosum. (*By M. Mackenzie, Foochow.*)

As the Chinese skin readily takes on **pigmentation,** we find melanotic sarcoma a not infrequent form of tumour.

A most interesting tumour formation is described by John MacWillie of Wuchang in the *China Medical Journal*, for January, 1909. The patient was a woman twenty years old, the disease commenced at birth. When born, a very small area of pigmented skin, coloured chocolate brown, was in the middle of the arm. This pigmented area gradually enlarged, but without swelling, until she was about twelve years old. At that time swelling slowly began and continued until she was eighteen. She then married and the growth became very rapid thereafter. She never menstruated. There was slight cachexia and

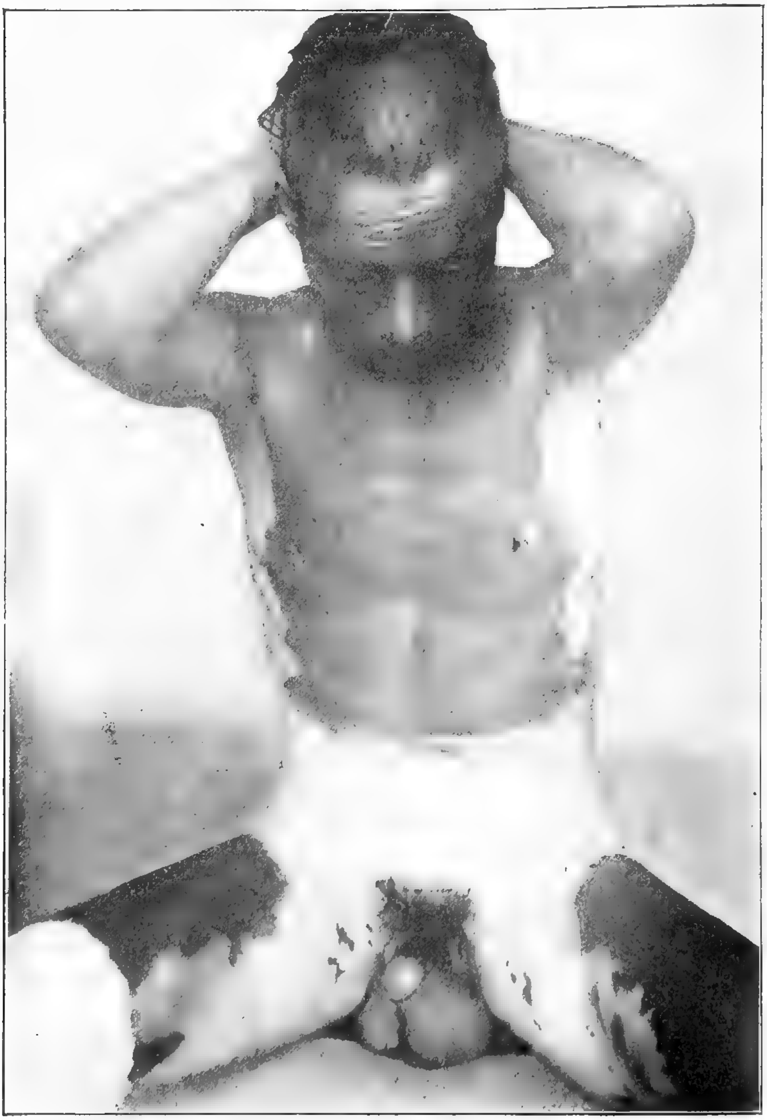


FIG. 186. Symmetrical vitiligo. (*By Jefferys.*)

dull mentality. The tumour extended from about 4 inches above the wrist (the left) to the base of the neck, taking in the whole circumference of the arm anteriorly past the median line to the end of the ribs, posteriorly past the median line extending down to the lumbar region in the middle line, with an unpigmented slightly swollen area.

The usual forms of **gangrene of the skin** and deeper parts are found. and perhaps some unusual forms. Cancrum oris and noma are quite common and typical. We have seen hospital gangrene in two instances, and other moist gangrenes, bacillus coli communis, and so forth. The symptom complex of Raynaud's disease typical but not idiopathic, was reported (in the *China Medical Journal* for March, 1909, by Cole, of Ningpo), in a fourteen-year-old schoolboy of well-to-do family. There was a history of one week's fever, no special symptoms. Then early in the morning both feet became blue and cold with bilateral, symmetrical blueness of all the toes with half of each dorsum pedis. Both heels also became blue, and later other symmetrical parts, and so forth. Malaria was the suspected cause—double tertian was the variety—and the general

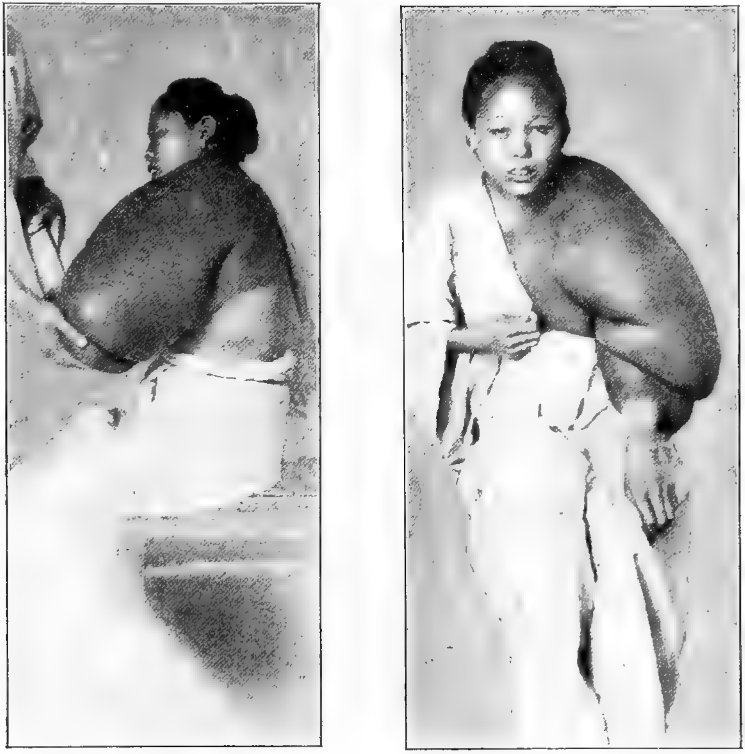


FIG. 187.—Pigmented tumour. (*By John MacWillie, Wuchang.*)

condition responded to quinine. Cole comments most interestingly, as follows:

"One is left with the conviction that some toxic agent acting directly upon the nerve supply of the arterioles caused the tonic contraction of the voluntary muscle and so starved the tissues to death. Amputation was performed after which the anterior and posterior tibial arteries were hardened and sections made, but the evidence gained was inconclusive. The fact that there were successive exacerbations after coming into hospital, is not by any means against the toxic theory; for example, under the best conditions the diphtheritic toxins can subsequently cause successive paralyses, even after the local lesion has been cured. That there are vegetable toxic agents, of which we know very little except that gangrene may be the result, is shown by a letter from Dr. McFadyen in the *China Medical Journal*, July, 1908, p. 275. But of such we

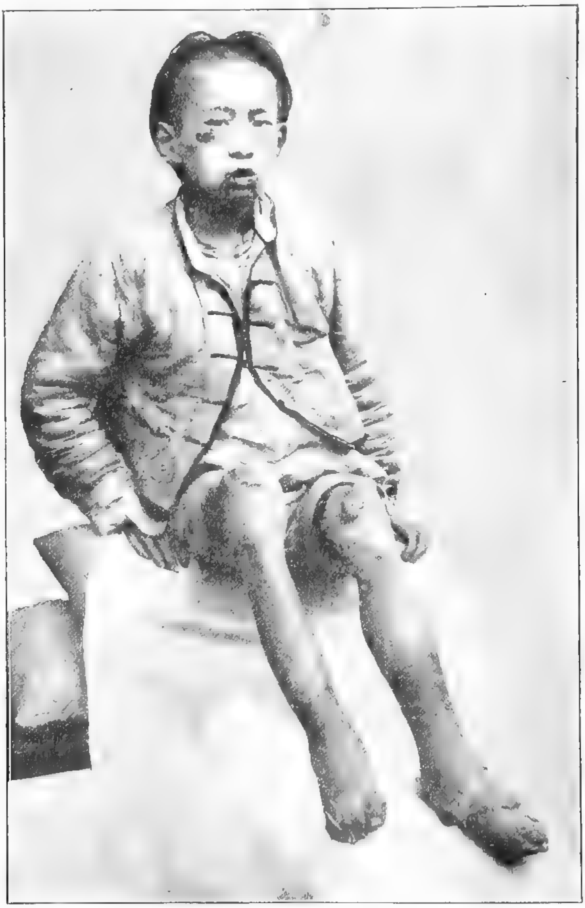


FIG. 188.—Raynaud's Disease. Condition June 1, 1908. Note the level of asphyxia of legs and the former line of demarcation, knee areas, gangrene of lower lip and malar eminence. (*By A. F. Cole, Ningpo.*)

had no suggestion in any of these three. In the last everything seems to indicate that the toxic agent was generalized, for with the remarkable exception of the hands, most parts of the body were symmetrically affected.

"Whether the process would have resulted in the lad's death, had not the blood been examined and tertian parasites (small and full grown) found, we cannot say, but the improvements seem to date from the commencement of taking quinine sulphate; up to that time the considerable variety of drugs used were for the relief of symptoms only; the local treatment of the limbs was to keep them wrapped up in wool, hoping for recovery.

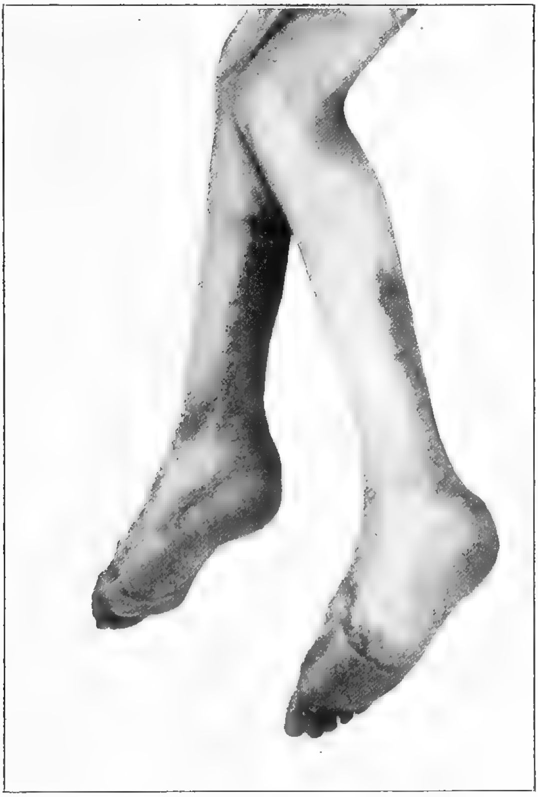


FIG. 189. —An earlier stage of Coles' case.

"Very little emphasis has been laid on the absence of what is often associated with Raynaud's disease, viz., hæmoglobinuria. But it gives food for thought when one realizes the possible analogy between Raynaud's disease with or without paroxysmal hæmoglobinuria and malaria on the one hand; and on the other, malarial patients in whom the ingestion of quinine or the presence of some (at present) unknown causative factor, can set up hæmoglobinuria. In the case of this lad, it would seem that in some way the malarial parasites were connected with the course of his illness." Whether some day we shall learn the relation of the exciting cause of Raynaud's disease to that of blackwater fever, may depend upon our ability to read aright and to interpret the meaning of such cases as those just mentioned." *Cole, Ningpo.*

"Dzing Yiang-Kwe, aged thirty-five, native of Gyiang-saen, Chekiang, male; is an actor, unmarried. No history of exposure or of accident; said to have been well fed. No evidence of syphilis; looks a hearty man.

"Admitted for gangrene of portion of left little toe and of right foot up to the region of the metatarso-tarsal articulation, for which Lisfranc's operation was done; history of 'song-'ae bing' two months before coming to hospital, lasting one month with irregular fever of moderate degree; at the time of this illness he stated that he had no cough, but great loss of strength and wasting; his urine had been highly coloured, but not 'blood red.'

"He states that two weeks after commencement of this illness both feet became numbed and very cold up to the ankles. At the end of the four weeks he says he took off his socks for the first time since his illness began, and found his toes black and adherent, his heels were also cold and black, and the feet were cold to the middle of the dorsum. Five days later sensations were normal and one month later he came to the hospital; at operation surprisingly little bleeding and secondary hæmorrhage the following day, necessitating opening up wound and re-dressing. Subsequent recovery uneventful."—*Cole, Ningpo.*

Another case of Raynaud's disease is reported by Elliott I. Osgood (Chucheo):[1]

"A case was brought into my clinic about the 5th of February. The man was forty years old, a street hawker of eatables, having been one of China's unfortunates who had been driven from his native province (Shantung) by famines. He had lived from hand to mouth ever since.

"He had been selling Chinese doughnuts about the town one morning when he was attacked with shooting pains in his limbs and began to be feverish. He returned to his lodgings and went to bed. The pains had increased and extended over his entire body. Burning pains were experienced in the stomach, creating a constant thirst. Every movement of the body added to the pain.

"When brought to us there had been no cessation of the trouble. His feet were bloodless and cold to the touch. When asked if they were cold, he said, "No." They evidently had become numbed. It looked like a case of multiple neuritis, but the next day's development changed our diagnosis.

"Both feet turned greenish-black; blisters rising on the ankles as if burnt. The fingers of the right hand were also covered with blisters. Gangrene was very apparent and on the feet symmetrical. The hand healed in a few days with loss of only the outer skin and one affected nail.

"The feet, however, grew daily worse. The heart was feeble and rapid and the prostration marked. We feared bedsores, and so in spite of the pain it caused, tried to vary his position. Then we found a patch of gangrenous tissue starting from the middle line of the sacrum extended to the left. There had been no pressure here, so it was not a bedsore. We turned him onto his left side, but a bedsore started on the crest of the ilium almost immediately. There were slight patches on the inner surface of the right knee and over the greater tuberosity of the humerus. We were limited to laying the patient on his right side, where fortunately no tissue gangrened.

"The hands and arms troubled us a great deal, as they would swell whenever the shoulders were cramped. The back of the hands would be filled and the skin become pearly white. To move the hands or arms continued to give pain.

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[1] *China Medical Journal.*

"The feet grew worse until only the thick skin on the ball of the foot retained anything like natural color. The skin peeled off and disclosed a moist, greenish and mottled surface underneath. The right leg just above the external surface of the ankle developed a sinus and discharged great quantities of pus. This pus burrowed into the connective tissue surrounding the gastrocnemius muscle, but seemed to be discharged from the foot. Lines of demarcation appeared above both ankles, completely surrounding the leg. The left leg showed like marks of containing pus at a later period. The patch of gangrene over the sacrum extended on to the left side, 3 inches wide by over 4 inches long. Lines of demarcation formed and a slough 1 inch deep was removed. A thin slough but larger in area was also removed from over the left tuberosity of the ilium. The pains in the stomach lessened and pain largely disappeared, except when the patient was moved. He evidently was getting a little better. It was likewise evident that he would lose both feet. One evening after he had been in the ward about twenty days the attendant came in hastily and said the patient was dead. Our attention had not been drawn to him on that day and we at first thought his death due to pyemia or septicemia. But upon examination we found the dressings over the sacral ulcer and the bedding under his hips soaked with blood. His death was due to hæmorrhage. As usual, it was impossible to perform a post-mortem examination." *–E. I. Osgood, Chucheo.*

Cole also reports a form of gangrene of the foot to the metatarsals, as the result of what he calls "Song-'ae bing." (Shanghai fever among the foreign population is Malta fever in all its clinical significance; but "song-'ae bing" is typhus, typhoid, or any fever of that general character.)

"Me-ts'ing, aged five, female. Brought to hospital with gangrene of both feet; from toes to metatarso-tarsal joint dead black colour, with nothing more than slight œdema about this level, and no inflammatory reaction except slight temperature. Feet had not begun to be 'bound;' special inquiry eliciting this fact. She had had an attack of "song-'ae bing" previously. Double Lisfranc's amputation performed, and recovery uneventful."*—Cole, Ningpo.*

We have also seen this exact condition in a patient from the Shanghai Goal, symmetrical and including all the toes and certain of the metatarsal bones.

Syphilitic endarteritis is responsible for many cases of dry gangrene of the legs and feet in young men. This is owing to obstructive endarteritis.

Frost bite is responsible for a considerable number of dry gangrenes

"A little girl was brought to the hospital by a charitable lady who said she had found her on the street with no one to care for her. Both feet were frost bitten so badly they were almost at the point of dropping off. One foot was amputated and the other will have to be removed soon."*—Park, Soochow.*

"Dry gangrene of both feet. From frost bite in March a patient appeared in October with both feet black and mummified, tibia and fibula were quite bare for 2 inches just between the healthy tissue above and the black feet below. Double amputation at seat of election, and special shoes, allowed him to leave hospital about a month later walking on his knees."—*London Mission Men's Hospital, Hankow.*

and of course embolism plays its part; as in an old man with embolism of the anterior tibial artery, wherein there was a complete sloughing of every muscle supplied by the vessel and the skin over the same. Immediate operation was refused by us because of the extreme debility of the patient and he committed suicide to get away from the pain.

A curious form of gangrene has been reported from time to time from various sources, consisting of inflammation, œdema of the face and surrounding parts, and a somewhat superficial gangrene of the skin thereof. The condition was described in a letter from A. A. McFadyen.

McFadyen is almost certainly correct in the view that the drug enclosed to us is the cause of this form of gangrene of the skin, and though the specimen was not in good preservation, there was every indication that it was stramonium leaves, or some closely related plant.

Toxic Gangrene.

[A reply to Dr. A. A. McFadyen's query in July number of the *China Medical Journal.*]

SUCHIEN, July 23, 1908.

"DEAR DOCTOR:

"In the famine of 1898–1899 in North Kiangsu I treated many cases as described in his letter, and I named the disease 'gruns' disease, because at that time I thought it due to eating wild weeds, which we usually call gruns, and not sufficient grain. All the cases at that time were women, although I treated four times as many men in the daily clinic.

"I diagnosed the trouble as stomach irritation and treated it as I do stomatitis—C. C. pills, chlorate of potash in fairly large doses, and a pill of gentian, ext. rhubarb and cinchonine later in the treatment. The result is like magic. A patient with eyes swollen shut, by the next morning, will have them fully open, and other swelling correspondingly reduced.

"Gangrene never develops if treated promptly, and after treatment there is no advance of gangrene if already started.

"The gangrene as I have seen it, is only of the skin.

"I had one case with gangrene of the skin of the head and most of the face who recovered. The nose is often gangrenous.

"I was so interested in these cases at that time that I wrote about them to the *New York Medical Journal*, and the article was published.

"The strange part is I never saw another case, as I remember, until our next famine of 1906–1907. The cases came in numbers, and I still diagnosed it as 'gruns' disease, and a short account of it appeared under famine notes in the *North China Daily News*. These responded to the treatment as mentioned above, not one, in about thirty cases that I saw, but what recovered in a few days, if seen before gangrene developed.

"This spring, 1908–1909, I was forced to change my diagnosis. To my surprise in April the cases appeared again, and no famine to account for it. On inquiry I found it due to a poisonous plant, in all probability the same one that Dr. McFadyen sent you.

"The case mentioned in the same *Journal* by Dr. Shackleton, entitled "More Gangrene from Frost," answers to the description of this poison weed. The hail was an incidental circumstance and covered up the true diagnosis.

"I have made no external applications unless true gangrene has developed.

"Yours, in the interest of our *Journal*,

"Mrs. B. C. Patterson, M. D."

Other conditions of special interest though of far less frequency are **actinomycosis** reported by Stooke and Graham of Ichang in the *China Medical Journal* for July, 1904. The condition originated five years previously in a knife wound in the palm of the left hand. Syphilis was denied, leprosy excluded; pure eczema existed for four years without ulceration or warty growths; the pus showed actinomycosis. The chief points of interest were the definite origin of the disease at the site of injury, and the absolute localisation in the hand and arm. Amputation was resorted to, and there was no report of recurrence.

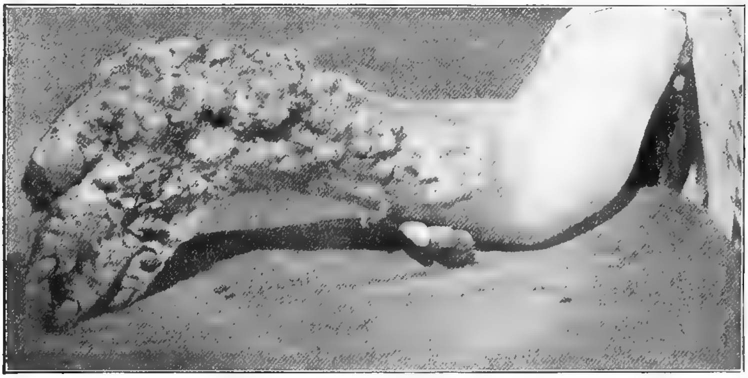

Fig. 190. Actinomycosis originating in a knife wound of the palm. (*By Stooke and Graham, Ichang.*)

Madura foot has been reported from South China, but in the absence of bacterial examination these cases remain doubtful.

Butchart,[1] of Lucheofu, reports a unilateral nervous lesion involving the right half of the face in a man forty-five years old. The trouble existed for four years, starting with irritation and itching, of which only he still complained. The condition was strictly unilateral, worse near the median line. The hair was partially lost, from scratching. The lower lip was the lower margin of the condition, the apex of the head the upper. The eye was destroyed, and the ball shrunken.

The other side of the face was normal in every way, no numbness or loss of hair or eyebrows. Syphilis, leprosy, and malaria were excluded.

[1] *China Medical Journal*, September, 1908. This case is also referred to in Chapter XXII in connection with neuropathic keratitis.

The various **ringworms** are found commonly and extensively. Tinea versicolor is the least frequent, but we have seen it in areas covering the entire abdomen, chest and back. It readily responds to treatment.

"Six cases of ringworm and three of favus were stained. In two of the former and all of the latter the fungus was demonstrated; the variety of the former was megalosporon, which perhaps suggests a possible connection with the universally diseased dogs in every street." *Cole, Ningpo.*

"Pityriasis versicolor nigra:

* * * "a variety I had described many years ago as occurring in South China, produced by *Microsporon mansoni*, which contains much dark pigment, etc." *Manson, p.* 771.

Ordinary ringworm is often seen, though not to any abnormal extent.

"Tinea circinata, or ringworm of the non-hairy skin, is easy to cure—quite a different matter from ringworm of the scalp. An ointment of ammoniated mercury, or sulphur, ʒss, acidi salicylici gr. x, naphthol gr. iij, and vaselin ʒj, rubbed in twice a day, will effect a speedy cure." *Authorship lost.*

"Pityriasis versicolor is also very common in the tropics. On the dark-pigmented skins of negroes, Indians, and dark-complexioned Chinese, the patch of pityriasis—contrary to what obtains in Europeans and light-skinned Chinese is usually paler than the healthy integument surrounding it."—*Manson, p.* 770.

"A child was brought suffering with pityriasis rubrum. The whole skin was red and peeling, from the sole of its feet to the crown of its head. Not one hair did it possess, not even an eyelash."—*Park, Soochow.*

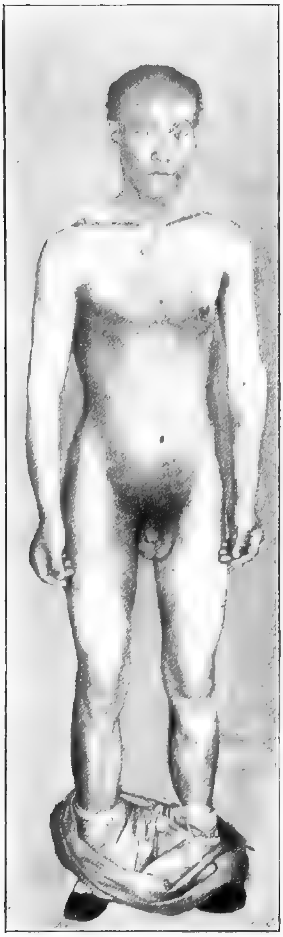

Fig. 191. -Tinea versicolor. (*By Jefferys.*)

Favus is exceedingly common and destructive. It is known among the Chinese in Shanghai as "*la li deu,*" and is especially associated with the poor, being largely a filth disease. It is common to see the entire head of hair lost and the scalp reduced to scar tissue through which a few bristles project here and there. It is fairly easily treated if one can obtain consent to shave and use other vigorous, thorough-going measures. But of course its path of destruction cannot be re-vitalized.

There is **another destructive condition** confused by the Chinese with favus and yet entirely unlike it. It is exceedingly chronic. It is destructive of the hair follicles, the scales are small and silvery, at first in patches varying in size, later it becomes confluent, responding with the greatest difficulty to any form of treatment, and in the end leaving areas of baldness not so complete as in favus and with not nearly so much scarring. We have looked carefully for the supposed fungus, but have failed as yet to find it. This also is called "*la li deu*" by the Chinese of Shanghai.

Under the heading of **treatment,** we would emphasise especially the absolute necessity for complete shaving of all affected parts, keeping them close cropped, the vigorous use of the scrubbing brush, and the special virtue of tincture of iodine.

Other ringworms of the scalp are common in South China, but we need more study of the parasitic causes.

We have seen two cases of lichen planus, one case of xanthoma tuberosum, and one case of erythema nodosum.

> "A case of rheumatism, with great profuse **hæmorrhagic purpura,** was interesting on account of the medicine which the patient had previously taken. During the previous six years he had taken as medicine the brains of more than *thirty horses* which he had killed especially for this purpose."—*Johnson, Ichowfu.*

Tropical boils in the spring become so numerous as to warrant the term epidemic being given.

> "These are an indolent form of boil, usually painless, and hardly ever coming to a 'point.' They are attended by little discomfort or physical prostration and no temperature. The area affected is very limited, and even the boil is not of an inflammatory red. Treatment by a hot boracic dressing usually succeeds, with quinine and iron administered internally. Carbuncles have always to be dressed with strong carbolic lotion, and are met with of great size; they must not be confounded with above."
> —*Wolfendale, Chungking.*

There is a splendid field here for **autogenous bacterine therapy** and it should prove feasible for practical work in China. The Shanghai laboratory is already using it, and in obscure cases of infection, and in the majority of furuncular and carbuncular conditions some standard "aureus bacterine" will often work marvels.

General Rules for Septic Diseases of the Skin.

1. Differentiate the abscess and establish the diagnosis and causation.
2. Sterilize the skin over and about the disease—iodine method.
3. Open freely and evacuate gently.
4. Curette with sterile gauze.
5. Disinfect the abscess walls.
6. Drain freely, or pack lightly.
7. Antiseptic dressing.
8. Calomel internally.

General Rules for Felons, Multiple Boils, and for Carbuncles.

1. Examine the urine for sugar.
   Count the white blood cells when diagnosis is not clear.
2. Differentiate the lesion and establish the causation.
3. Treat the dyscrasia or source of infection.
4. Cover the lesion; disinfect and protect surrounding parts.
5. Disinfect the part, if indicated for operation.

CHAPTER XVIII.

TUMOURS.

Tumours are a Sort of Specialty of China.—Since the first physician who reported anything about medicine in China to the present day, the whole fraternity has been interested and fascinated by the subject. The explanation is simple enough. The population is large, and though tumours may not be more frequent among the Chinese than among other races, the sum total is great indeed. But special interest is added from the fact that combined with a lack of ability to remove even the simplest growth, the Chinese are as a race particularly unembarrassed by the mere presence of morbid growths which a more sensitive race would find repellant indeed. To the Chinese a growth is painful or inconvenient, but seldom disfiguring.

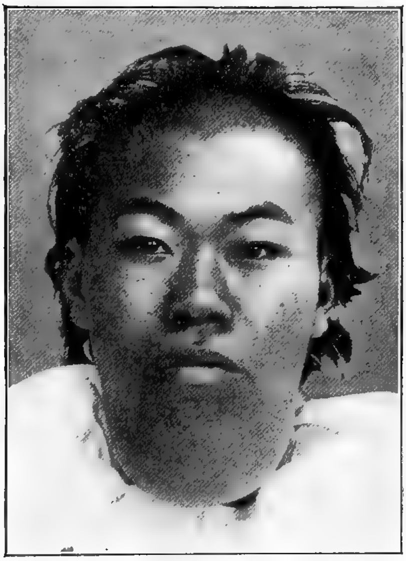

FIG. 192.—Double hygroma.
(*By Jefferys.*)

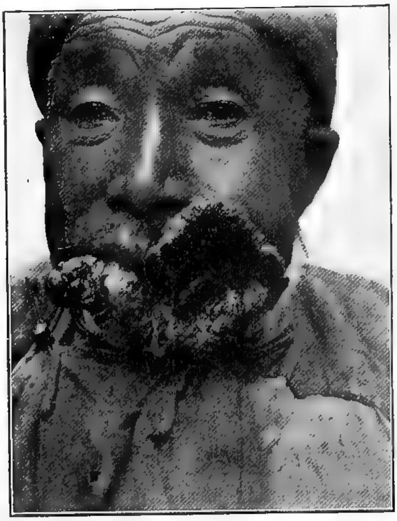

FIG. 193.—Epithelioma of the lip.
(*By Jefferys.*)

We have been particularly fortunate in our own practice in meeting with a variety and multiplicity of tumours such as it has been the fate of the minority of surgeons to deal with, and naturally the matter has grown to have a special interest to us. Moreover, there are constantly being

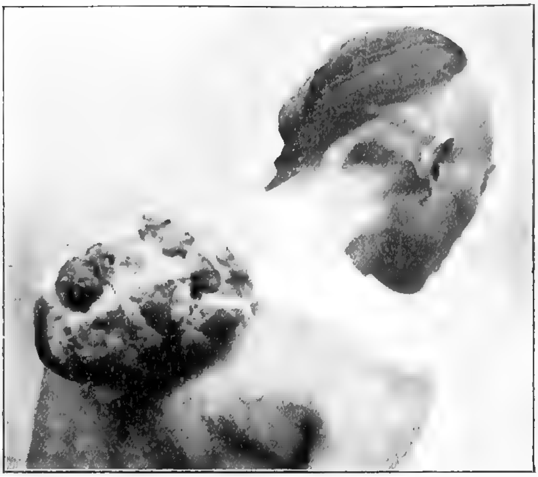

FIG. 194.—Pedunculated fibroma, ulcerated. Five years' growth. (*By Jefferys.*)

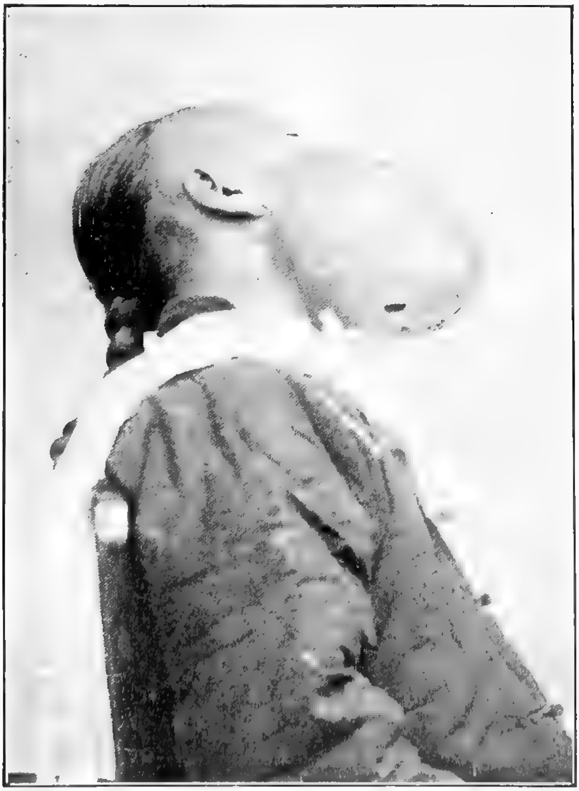

FIG. 195.—Osteosarcoma of inferior maxilla. (*By H. B. Taylor, Anking.*)

reported and shown in photographic form from various parts of the empire growths which, each and all, have their special interest or peculiarity, and many of which have been reproduced and accounted for in the *China Medical Journal.* Some of these have become classic in various standard works on surgery, such as *Tumours, Innocent and Malignant* (J. Bland-Sutton, F. R. C. S.), and so forth; and many others of equal interest are as yet unreported in print.

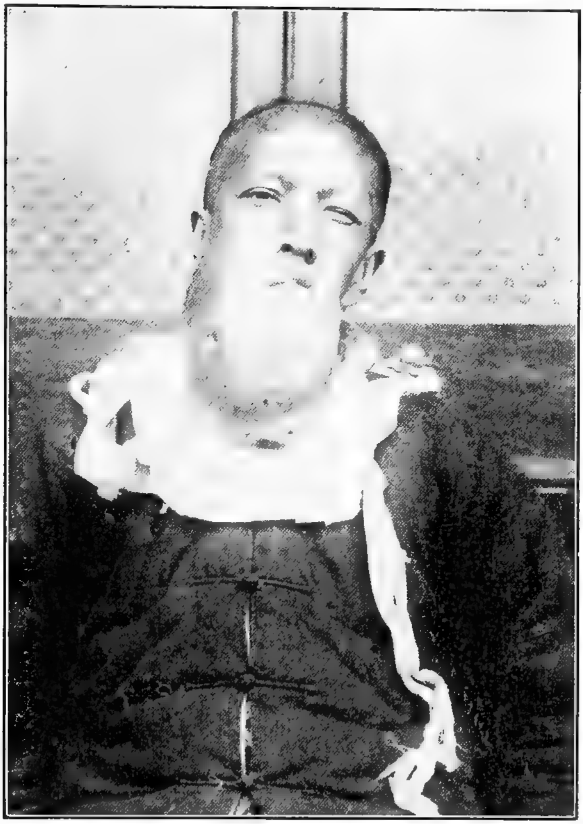

FIG. 196.—Osteosarcoma of inferior maxilla.

The first characteristic which strikes one in a review of the whole is, their **exaggerated size** or **advanced condition.** This is easily accounted for by the already mentioned native lack of means of removal and insensibility to disfigurement.

The first inclination is to say that the tumours of China are grown-up or overgrown specimens of what we see at home, or, having passed middle age, are nearing decrepitude. But it is interesting to find out after careful comparison that large tumours take on new features, not only histologically, but especially clinically, which the smaller ones do not show and of course, various forms of benign degeneration and of clinical change manifest themselves in tumours essentially benign as, for example, the extensive calcareous deposits found in the centres of the larger simple fibromata, or the tendency to cyst and sinus formation in other tumours which, in their smaller stages, exhibit no such formation. The clinical point may be illustrated by the vulvar elephantiasis which in smaller manifestations causes little or no inconvenience, but later on seriously interferes with the functions of the part merely by mechanical presence; or the exaggerated pedunculated tumour, say, of the upper lip, which must be raised to allow food to be put in the mouth, and so on. Or the large

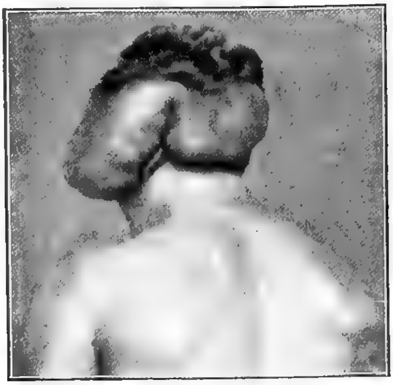

FIG. 197.—Multiple fibrolipomata. (*By A. W. Tatchell, Hsiaokan.*)

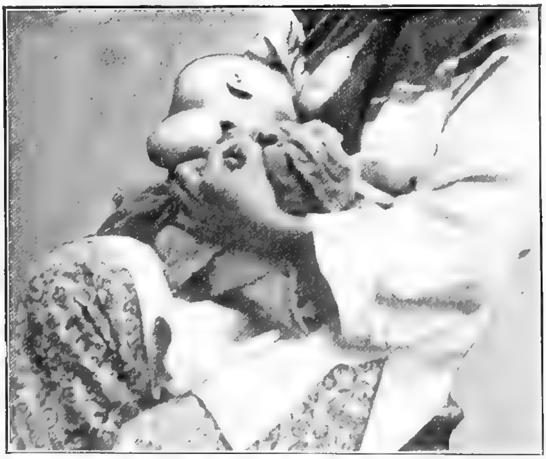

FIG. 198. Meningocele in a baby three weeks old. Operation and cure. (*By A. W. Tatchell, Hsiaokan.*)

fibroid which must be kept in a sling or placed on a table to ease the tired shoulders of the un-Christian pilgrim.

Frequency of Benign and Malignant Growths in South China.

"The following statistics of Kühne are interesting, but it should be remembered that Chinese seldom apply for the treatment of small growths.

"Statistics for 34,197 new cases seen at the Polyclinic of the Tungkun Hospital six years (see reports Dr. Kühne, Dr. Olpp) 1899, 1903, 1904, 1905, 1906, 1907.

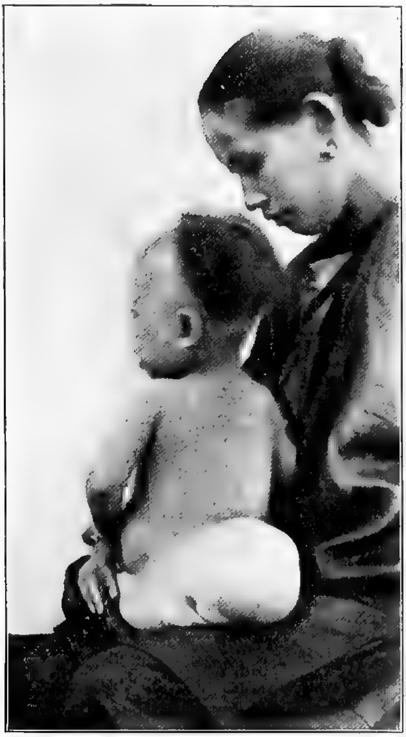

FIG. 199.—Syringomyelocele. Child died one day after operation. (*By J. E. Kuhne, Tungkun.*)

Analysing these I find that the malignant growths were 0.5 per cent. of the total number of new cases seen and that the percentage of benign were 0.9 per cent. N. B.—Enlarged tuberculous glands are not reckoned as neoplasms.

"The percentage of malignant and even of benign growths seems to be much larger in western countries. Looking over the statistical tables of the Royal Infirmary of Edinburgh for the six years ending September 30, 1909, we note that 68,639 patients have been treated in the wards, and that 3,890 are reckoned as malignant cases, giving a percentage of 5.6 compared with the percentage of malignant cases we had in South China, 0.5. Similarly by comparing the benign growths we find that 1,183 cases of these have been admitted and treated in the wards of the Royal Infirmary, giving a percentage of 1.7 compared with the percentage 0.9 above recorded."

We do not think we can do better than briefly to discuss the various common, and therefore important, or rare and otherwise peculiarly interesting tumours found in China, by taking the order given, let us say, in Bland-Sutton's *Tumours*. The statement of each must of necessity be extremely brief and serve merely to indicate what may be expected, and what may be unexpected.

Lipomata.—Present. Rarely complained of, unless excessively large or degenerate. We have removed them from the neck, from the back (where one, in the exact central line over the lumbar vertebræ closely simulated meningocele), and from various other localities. But at the present time it is rare that consent for their removal can be obtained.

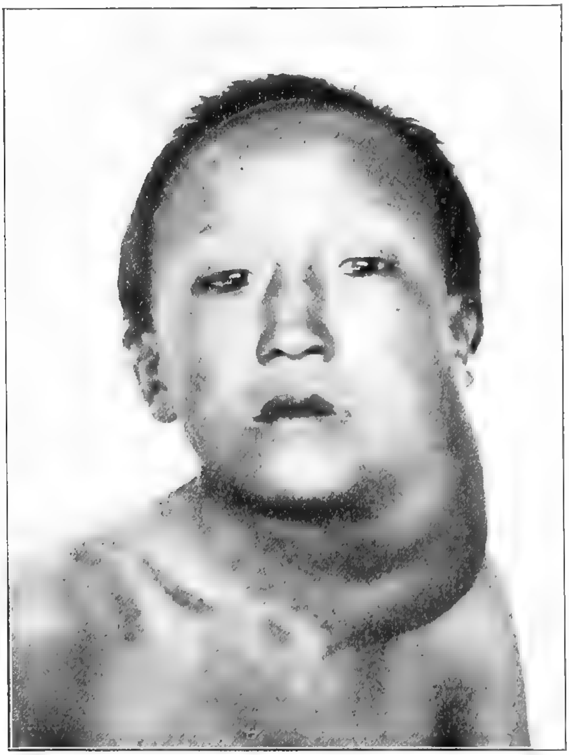

Fig. 200. Parosteal lipoma. Thirteenth case in literature. (*By Jefferys.*)

"We had to relieve a man from an enormous fatty tumour, which grew on the outer side of the right arm, with a basis extending from the shoulder down to the elbow. In his luggage, he used to carry a small bench on which he could rest the growth." -*Olpp, Tungkun.*

"A girl eighteen years old was brought to us suffering with what appeared to be a cancerous growth as large as a child's head on her abdomen. The trouble proved to be a badly ulcerated fatty tumour, which she said she had had ever since her birth, and which had been gradually growing larger ever since."—*Venable, Kashing.*

A form of special interest is the **lipoma developed from occupation,** upon the (usually right, sometimes both) shoulders of the coolies who carry heavy burdens swung from a bamboo across the shoulder. The pads so formed are of distinct service and a matter of congratulation to the possessor. But there is a tendency to eventual either infection or other degeneration with abscess and cavity formation, wherein the last state of that man is worse than the first.

In April, 1908, Reifsnyder (Shanghai) sent us for operation a boy too big for admittance to her women's hospital, exhibiting a typical case of what Bland-Sutton calls **parosteal lipoma.** Quoting page 21, he says:

> "This term has been applied to fatty tumours arising from the periosteum of bone. They are usually congenital and nearly always contain tracts of striated muscle fibre. Some of these tumours are clinical puzzles. Dr. F. Taylor reported a case in which a fatty tumour grew from the anterior surface of the bodies of the cervical vertebræ; it caused the posterior wall of the pharynx to project, and simulated a post-pharyngeal abscess. The patient was a girl four years old."

Such was the case we here report, only a much exaggerated form thereof. The patient was nine years old, the tumour having slowly developed through some years past. It felt what it was, a set of lipomata overgrowing bony structures. The tumour was exceedingly difficult of removal, but its complete removal was accomplished actually from the bodies of the fifth and sixth cervical vertebræ. Several bony projections had developed, extending into the lipoma masses, and being firmly an outgrowth from the bodies of the vertebræ. The tumour pushed larynx and trachea far toward the right, the left carotids and jugular being actually to the right of the middle line. Dyspnœa was manifest before operation and for some little time after, but a good recovery was finally made and no return of the growth has been referred to us up to the present time.

There are apparently but twelve cases on record of this tumour, including those of Taylor and Bland-Sutton, and our own makes No. 13. The bone was cancellous. There was no evidence of malignancy, and the tumour was completely removable. Maxwell (Formosa) reports true pedunculated lipomata weighing 10 or more pounds and hanging from the groin and axilla. Also a congenital lipoma of the sole of the foot.

Chondromata.—Cartilage does not figure particularly extensively in the tumours of the Chinese and is rarely seen as a single chondroma,

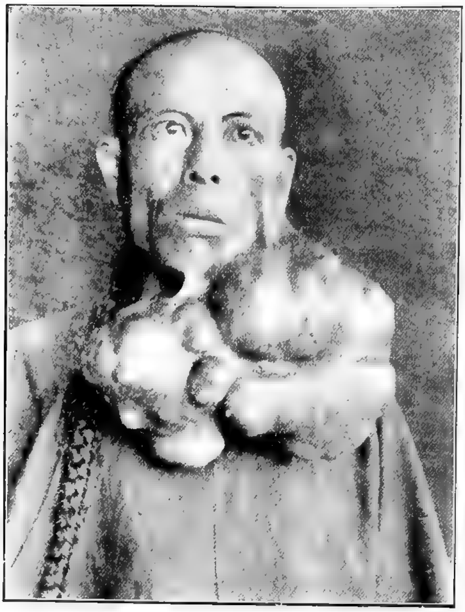

FIG. 201.—Chondroma. (*By P. B. Cousland Swatow.*)

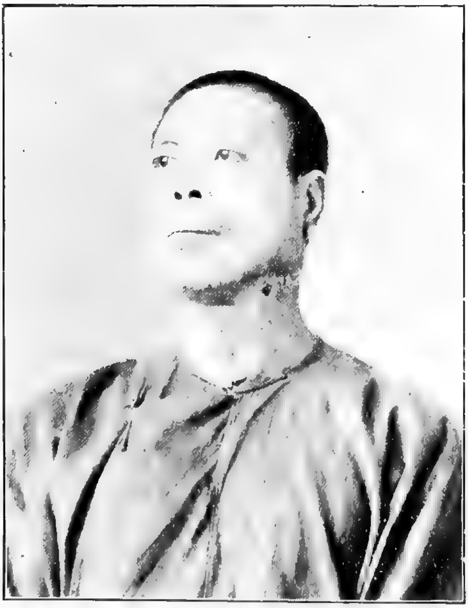

FIG. 202. The same, removed.

though it enters, of course, frequently into the composition of many mixed tumours, such as the mixed sarcomata and the dermoids.

Osteomata.—We meet with **exostoses** quite frequently, especially in the elderly, and the site of election is perhaps the lower muscular attachments of the femur. Pure osteomata are not, in our experience, of frequent occurrence. They occur fairly frequently below chronic ulcers of the leg as a result of irritation of the periosteum. The race is small-boned and there is no special predisposition to hypercalcification, so that tumours which might be expected to contain bony tissue are usually otherwise. Maxwell, Formosa, reports a case of an ivory osteoma on the nose.

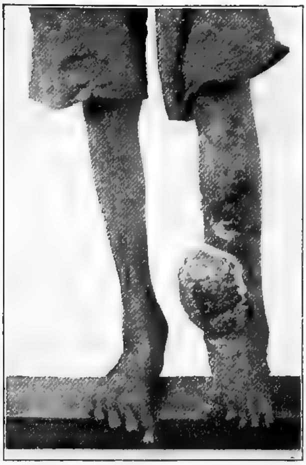

FIG. 203.—Osteoma of the tibia at the site of a chronic ulcer. (*By Maxwell.*)

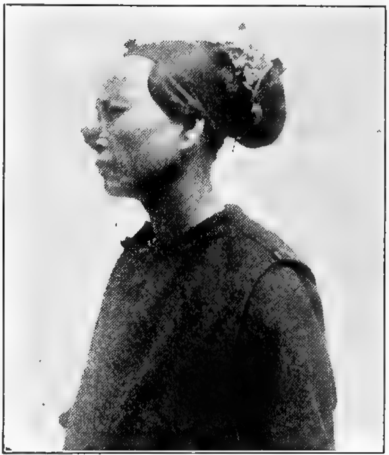

FIG. 204.—Osteoma of the nasal bones. (*By Maxwell.*)

Myomata.—In two cases pedunculated myomata of the uterus were removed at the Margaret Hospital, Hankow.

Myelomata.—We have seen many cases of **myeloma of the mandible, and one or two of the maxilla.** Of these latter, usually of its alveolar border, the tumour is exceedingly common and rarely proves malignant, even in its later developments. On account of the distortion and thinning of the bone, complete extirpation of the involved part is required. In the museum of St. Luke's Hospital, Shanghai, there is an old specimen of what we take to be myeloma of the last phalanx of the thumb, though it is marked "melanotic sarcoma." It is likely that both elements are present. We have not yet met with myeloma of the lower end of the femur, which, according to Bland-Sutton, is *the* seat of election.

We believe that myeloma is one of the commonest tumours, both of the lower and upper jaw, in China, and we doubt very much the malignancy of this form of tumour in most instances. The jaw should be excised wide of the growth, after which satisfaction is usually attained. We did in one case a complete excision of the right, and partial of the left, upper jaw for this condition; and H. B. Taylor[1] (Anking) and J. L. Butchart (Lucheofu) have sent us interesting photographs of such large tumours of the lower jaw.

We have several smaller specimens in St. Luke's Museum. There is a general disposition to call them all osteosarcoma. Osteosarcoma is a tumour growing as one with the bone; myeloma is a tumour growing from the bone-marrow and excavating and deforming the bony structure, but not a part of it. It is destructive of the bone, but only malignant on taking on the character of true sarcoma. We have seen varieties of each—that is, true sarcoma developed from myeloma, and primary osteosarcoma, and the simple myeloma that is the most prevalent of the three. McCartney (Chungking) reports a case as sarcoma which is almost certainly of this nature.

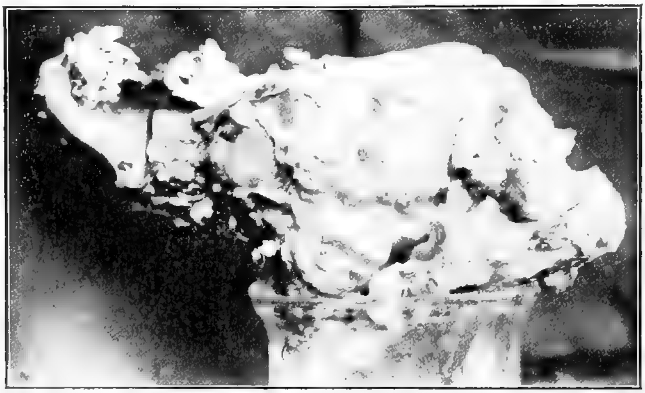

FIG. 205.—Myeloma of the mandible. (*By Jefferys.*)

"The patient was nineteen years of age. He gave the following history: about three years ago he had trouble with a decayed tooth, which was not extracted, and discharged great quantities of pus. The lump which developed at that time began to grow rapidly, when a few months ago it completely filled his mouth, and it was with difficulty that he could either take his food or talk.

"The growth constantly discharged a thick foul smelling fluid, which made life miserable for him. We found the growth involving the entire lower jaw extending from the maxillary temporal joint on the left side to the first molar tooth on the right side.

"The incision was carried along the lower edge of the jaw bone extending from the joint on the left side to the rami of the jaw on the right side. The flap was reflected up over the growth, and after the soft parts forming the floor of the mouth were dissected off, the jaw was sawn through at the first molar tooth on the right side, and disarticulated at the joint on the left side. The tongue was anchored for one week by a silk ligature being passed through its substance and tied to the nose by adhesive plaster. He was fed on liquid diet for the first week and made a rapid recovery."

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[1] *China Medical Journal*, July, 1908.

Myxomata.—Mucous polyps are abundant and large.

"Tumours removed (including sebaceous cyst 1, papillomata 4, dermoid 1, keloid 1, odontoma 1, lipoma 1, chrondroma 1, fibroadenomata 5, epithelioma 1, sarcoma 1, myxoma of male breast 1, others 5) * * * 23."—*London Mission Men's Hospital, Hankow. Report*, 1906.

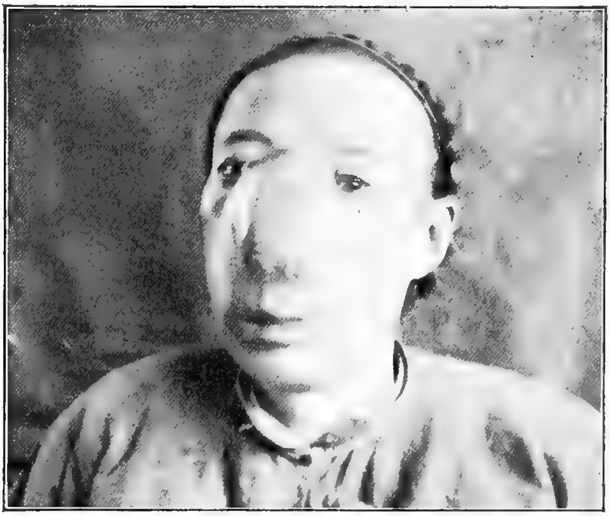

FIG. 206.—Nasal polypi, with great distention of the nares. The condition was undergoing sarcomatous change in the neighborhood of the turbinated bones. (*By Jefferys.*)

Sarcomata.—Sarcoma is, as at home, a tumour of great frequency. In its histologic manifestation the primary sarcomata are practically identical with those in our own race—small round-celled, spindle-celled, giant-celled, and so forth. We have seen them all. Sarcoma of the nose with metastasis to the cervical glands on both sides was thoroughly removed by Reid and myself, and there was no return at the time the patient was discharged, although the growth had been a rapid one. Patient was told to return for a plastic operation, but failed to do so. It is not likely that the cure proved permanent, but it may have done so. At any rate the relief following operation fully warranted its performance, as the nose had become entirely occluded. After operation the patient was able to breathe with ease and comfort.

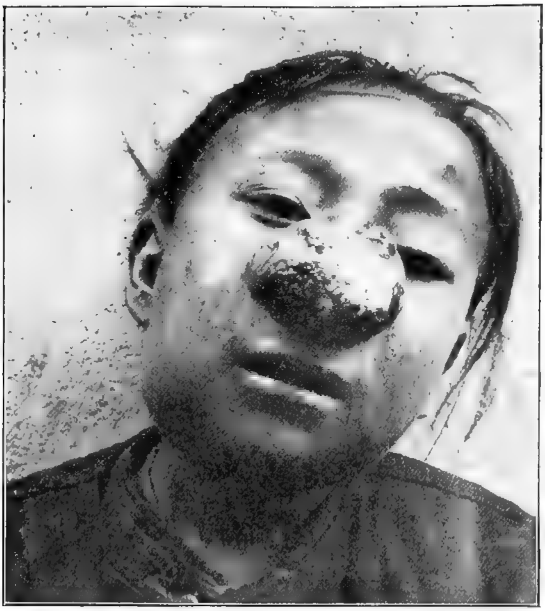

FIG. 207.—Sarcoma of the nose, with metastasis to the cervical glands. (*By Jefferys.*)

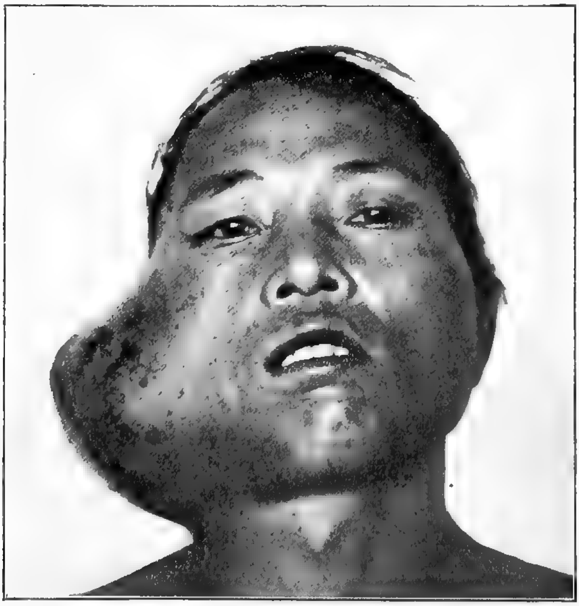

FIG. 208.—Sarcoma of the parotid gland. Very radical operation was followed by immediate recurrence, in spite of ligation of the carotids on the same side. (*By Jefferys.*)

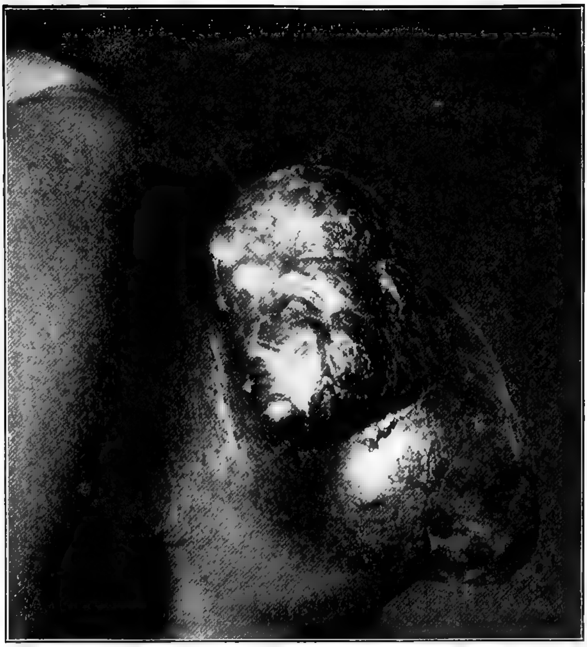

FIG. 209.—Fibrosarcoma of the connective tissues of the back. (*By Jefferys.*)

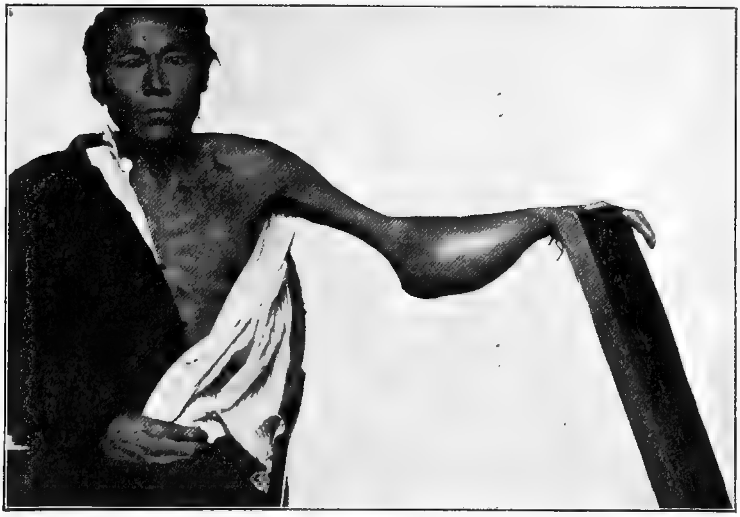

FIG. 210.—Osteosarcoma of the olecranon. (*By H. B. Taylor, Anking.*)

"A congenital sacro-coccygeal osteo-sarcoma in a child of six was of the size of the child's head; the operation proved fatal from shock three hours after its complete removal." *-Cole, Ningpo.*

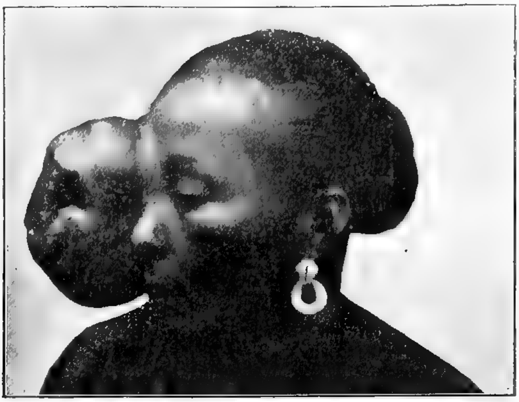

FIG. 211.—Osteosarcoma. The patient is newly married Her husband knew she was suffering from a tumour but thought it could easily be removed. No operation was undertaken. The duration was unfortunately not noted. (*By J. E. Kuhne, Tungkun.*)

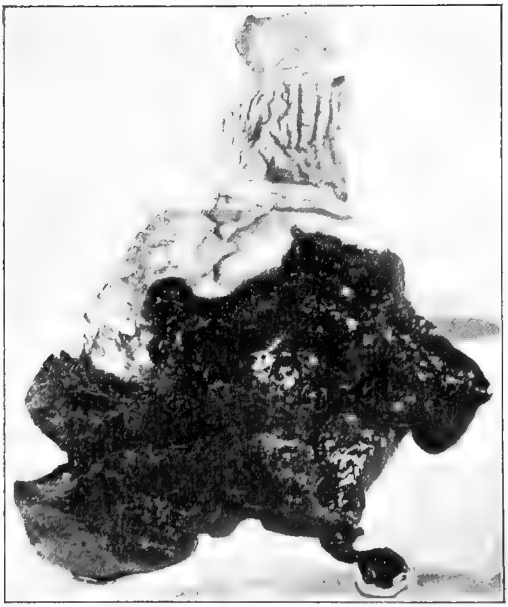

FIG. 212. –Melanotic sarcoma of the first finger. One year duration. No metastasis. (*By Jefferys.*)

But there are two or more particular characteristics of sarcoma in the Chinese. In the first place, since they do not commonly present themselves for operation in the early and benign stages of tumour growth, it is of constant occurrence to meet with tumours which have been for a period of years benign and slow of growth but, according to the patient, within a month or more taken on rapid proliferative development; the enlargement and more rapid growth causing anxiety and the seeking of advice. This is the expression in most cases of a malignant sarcomatous development in a formerly benign growth.

These sarcomata therefore are mixed in type and contain a greater variety of structure than the simple, primary growths. Such a tumour is that reported by Kühne,[1] of Tungkun, as teratoma of the testicle, which, originally a congenital teratoma—or, strictly speaking, dermoid—took on melano-sarcomatous proliferation. There are many of these sarcomas constantly met with. This tumour is an example of the other chief point in sarcomas among the Chinese, namely, the tendency to take on pigment and the comparative frequency of melano-sarcoma of the blackest type. The description of this particular tumour will be found under Teratoma. Again, the authors have never seen a case of primary sarcoma of the internal viscera.

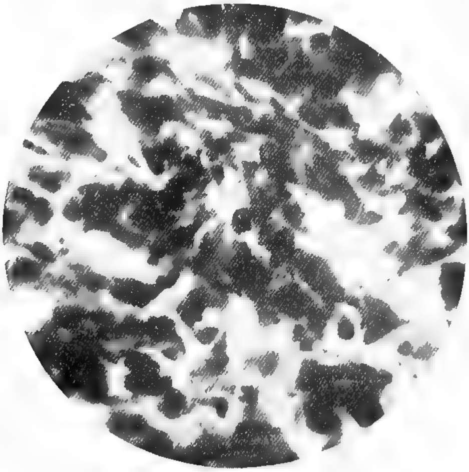

FIG. 213.—Section of the same. (*By Jefferys.*)

In the March number of the *China Medical Journal* for 1908 we reported a very black **melanotic sarcoma** of the forefinger. The patient was an elderly woman. The growth started under the nail one year previously; there was no glandular involvement and no recurrence after twelve months. It was liver-like and oozed black juice; and on section showed sarcoma cells and huge, dark brown pigment granules.

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[1] *China Medical Journal*, March, 1908.

"An intensely pigmented melanotic sarcoma of thumb in a woman of sixty-eight was treated by amputation at metacarpo-phalangeal articulation.

"In shape it was mushroom-like, 3 1/2 inches by 2 1/2 by 2 inches. So far four months' interval has shown no recurrence; it has been said by some surgical teachers that *local* treatment of melanotic sarcoma, when larger than an average walnut, is useless. This case may encourage others to hope and be of help to them in treatment." *Cole, Ningpo.*

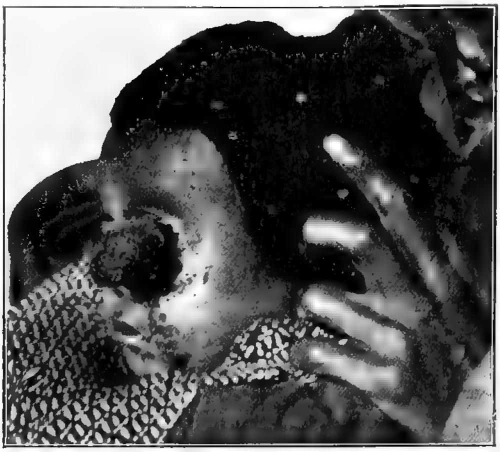

FIG. 214.—Melanotic sarcoma of the globe, arising, probably, from the choroid. (*By Jefferys.*)

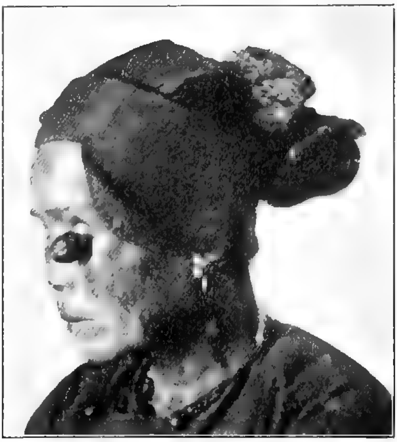

FIG. 215.—Melanotic sarcoma of the upper eyelid. Pedunculated. (*By Maxwell.*)

Another of these common forms of melanotic sarcoma is that originating in the iris. This form occasionally simply bulges forward and protrudes between the lids as a sausage-like ulcerating tumour of the globe.

In another case the patient was a young man; the tumor spread directly to the orbital walls, invaded the frontal sinuses, and ulcerated its way through the skin of the forehead. On operative removal, it was not closely adherent and came away readily, leaving a cave-like excavation. We have no doubt that recurrence promptly took place.

A typical example of the neglected tumour taking on sarcomatous change is shown in the hare-lip patient in the illustration.

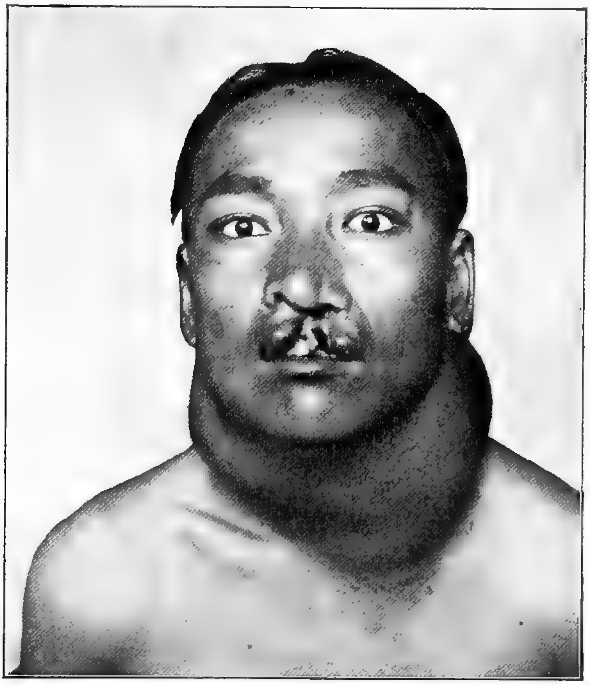

FIG. 216.—Sarcoma of the neck. Probably malignant goitre. Benign for some years, then rapidly malignant. (*By Jefferys.*)

Epulis and malignant epulis are frequently seen and the latter invariably requires prompt and radical excision of the jaw. The former, however, as in a case reported by W. E. Plummer (Wenchow) is benign and radical cure is attained with simple extirpation.

Epulis originally meant any tumour springing from the upper or lower jaw, but the term is used more definitely to-day to signify, (a) by sarcomatous epulis a giant-celled tumour which is therefore benign, slow and does not infiltrate. Clinically these have few symptoms, a little pain from nerve pressure, and sometimes there is enlargement of lymphatics which is often merely inflammatory from infection. Pressure does not usually take place, and if it does it is apt to be of the same character, but rarely is malignant. In 97 per cent. of cases a cure may be expected to follow radical operation.

(b) Fibrous epulis—a truly benign tumour.

"Case No. 4,274. Male, age thirty six. Fibrous epulis involving the whole of the ramus of the lower jaw on the left side and a part of the right side. The tumour filled the cavity of the mouth, pressing the tongue back into the pharynx. It completely prevented mastication and interfered with articulation and deglutition.

"On December 24, chloroform was administered, a laryngotomy performed, and a tracheotomy tube tied in. The pharynx was now filled with a sponge, after which the tumour was removed. After making the usual external incision the right ramus was sawn through with a chain saw about 1/2 inch in front of the body; the rest of the bone was then dissected with the tumour attached; the left side of the jaw being disarticulated. A thread was then inserted through the tip of the tongue in order to draw it out in case it should fall back. The external wound was sewn up with interrupted catgut sutures, reinforced by four hare-lip pins. The root of the tongue was carefully stitched to the structures back of the chin.

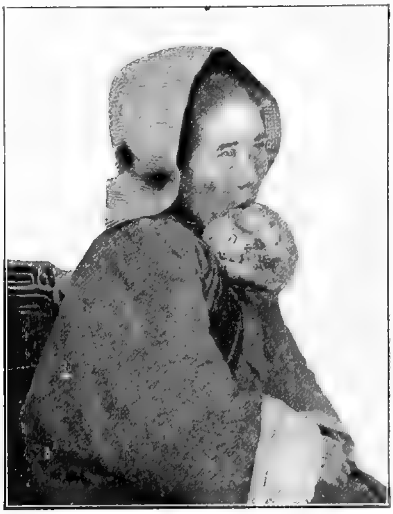

FIG. 217.—Epulis of the lower jaw. (*By W. E. Plummer, Wenchow.*)

"The tumour had completely absorbed the bone where it was attached, except its outer plate. It measured 4 1/2 inches in lateral diameter, 4 inches in antero-posterior diameter, and was 3 1/2 inches thick. The teeth of the left side had been pushed over and lay on those of the right side.

"After the operation it was deemed necessary to inject 2 quarts of normal saline solution subcutaneously. Rectal alimentation was necessary for two days after the operation. On the second day the tracheotomy tube was removed. The temperature never was above 99°. Four days before the end of a month the external wound was entirely healed." —*Otte, Amoy.*

It is the central *sarcomas* of the jaw, arising from the deep structures, that are truly malignant. Of even these spindle- and round-celled tumours 30 per cent. of cures may be expected, whereas of carcinomas only 5 per cent. of cures may be expected even if the entire jaw is excised and the most radical gland operation performed.

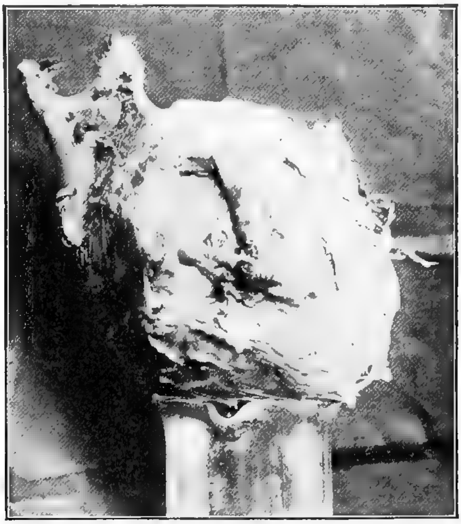

FIG. 218.—Fibroma of the mandible. (*By Jefferys.*)

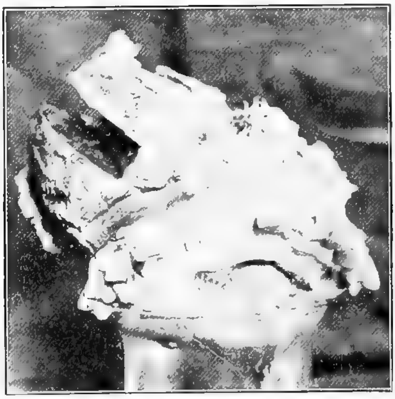

FIG. 219.—The specimen of Fig. 220.

"Sarcoma of neck in boy, inoperable, but an attempt was to be made to treat it with Colles' fluid."—*Tatchell, Hankow.*

Moles.—As in all dark-skinned races, **moles are prevalent** and dangerous.

Neuromata.—Neuroma is an uncommon tumour under all conditions. We have seen what Ashhurst used to call the **painful tumour of**

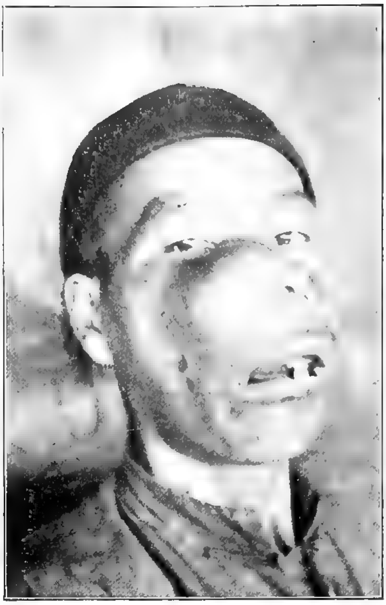

FIG. 220.

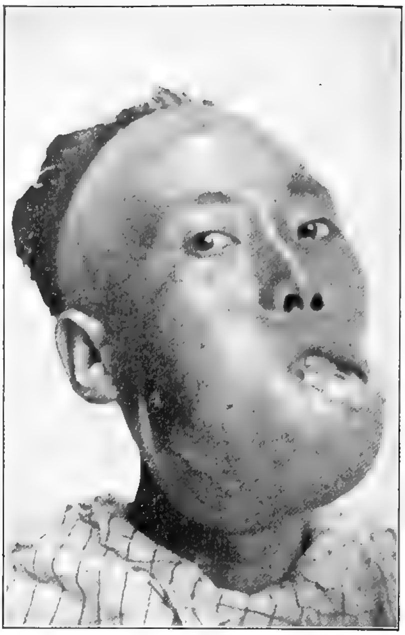

FIG. 221.

FIG. 220.—Sarcoma of the maxilla. Complete excision of right and partial of left maxilla. Final result unknown. Operation was successful. (*By Jefferys.*)

FIG. 221.—"Sarcoma" or myeloma of the mandible. Good operative result. (*By J. Butchart, Lucheofu.*)

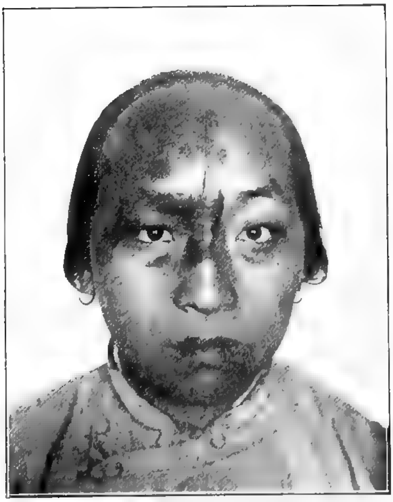

FIG. 222.

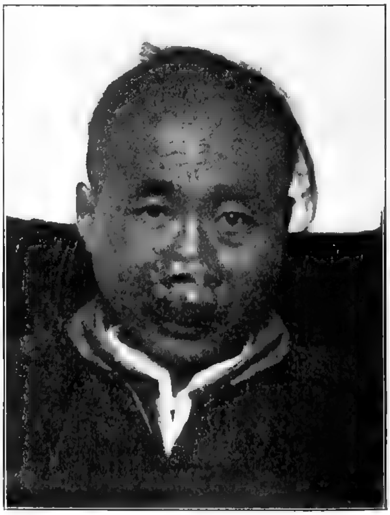

FIG. 223.

FIG. 222. Inkstain superficial naevus of the face. (*By Jefferys.*)
FIG. 223. Circoid anearism of the lip. (*By H. B. Taylor, Anking.*)

the leg—the small, laminated, terminal neuroma over the calf muscles, and just under she skin. It is extremely sensitive and a perfect torture to the afflicted. In size it was about that of a cherry-stone. These are readily enucleated with complete satisfaction.

We assisted Myers, of Shanghai, to operate on a tumour enmeshed in the brachial plexus. After very careful dissection, it was separated from all but one root, which had to be severed and stitched together again. A small extension of the tumour had made its way into the spinal canal via the foramen and dilated the foramen in the process. It was dragged out and removed with the tumour. There was considerable paralysis for some months, but final complete restoration of motion. Microscopically, the tumour closely resembled a large round-celled sarcoma, but its growth had been slow, and there was no recurrence after a year.

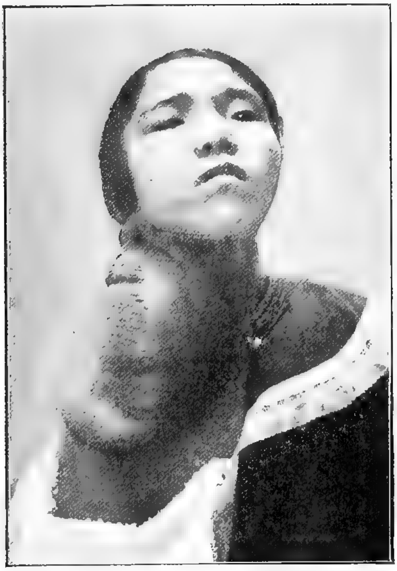

FIG. 224.—Cavernous nævus 10 1/2 x 8 1/2 inches, freely movable and painful. Started in a birthmark the size of a dollar. (*By G. A. Huntly, Hanyang.*)

Of course, fibro-neuroma of the nerves in leprosy is extremely common. Maxwell (Formosa) reports a neuro-sarcoma of the great sciatic nerve, measuring 6 x 4 inches.

Angiomata and Endothelioma.—The nævus is common, extensive port-wine stains, and often shoe-black stains,* being frequently observed on the streets, but in most cases not seeking treatment. Cavernous nævus is also prevalent.

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* One of these, in a girl of eighteen years, looked as if a bottle of ink had been thrown at her face.

G. A. Huntley, of Hanyang, reported an extraordinarily interesting true angioma of the region of the neck in a young girl. The tumour was 10 1/2 by 8 1/2 inches from above downward, freely movable and painful. It started in a birthmark the size of a dollar. An attempt was made to remove the tumour, but owing to the frailty of the patient and considerable hæmorrhage, the operation was not survived.

Endotheliomata are also seen clinically, and Maxwell (Formosa) has carefully studied and reported one as occurring in the upper jaw, in Tainan. Half of this tumour is in the museum of St. Bartholomew's Hospital, London.

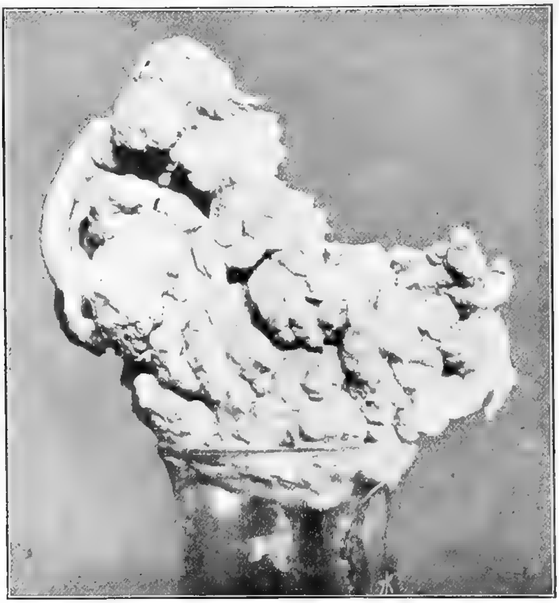

FIG. 225.—Cauliflower tumour of the face and auricle. Reference to several experts failed to recognise the tumour. It is probably an endothelioma. (*By O. T. Logan Changteh.*)

"A woman with a tumour in left iliac fossa, rising up to the level of umbilicus, with four months' history, advanced cachexia, rigors at irregular intervals, and temperatures up to 105°, following delivery (normal), and almost absolute constipation, asked for operation; on opening abdomen in middle line, the tumour was seen to be invading abdominal wall extensively, and this was continuous with the general mass of the tumour, and included uterus, tube, and intestines. Though our preliminary diagnosis had leaned toward pyosalpinx, yet the evidence of malignancy was so clear, especially in the fatty tissues, that after excising a portion for microscopical examination, we stitched up the incision: the patient from that date began to improve, and now nine months later, is in (apparently) perfect health, with only a slight thickening parallel to Poupart's ligament on left side: cachexia, constipation, and all the signs which led us to expect an early decease, have vanished: and the three doctors who agreed at the time of operation that there was no hope are now much interested in the sequela. The sections showed definite malignancy, being probably endotheliomatous: thus clinically and microscopically, the same opinion was arrived at.

"The woman declares nothing less than a miracle has taken place, and we confess the event has made us think considerably."—*Cole, Ningpo*, 1906.

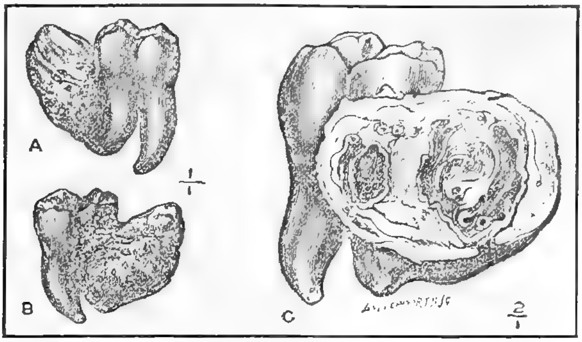

FIG. 226.—Second right mandibular molar of a Chinaman aged nineteen years, with a tumour possessing the characters of a composite odontoma. *A* and *B*, The tooth of natural size; *C*, the tooth enlarged and the tumor shown in section. (*Davenport's case, after Bland-Sutton.*)

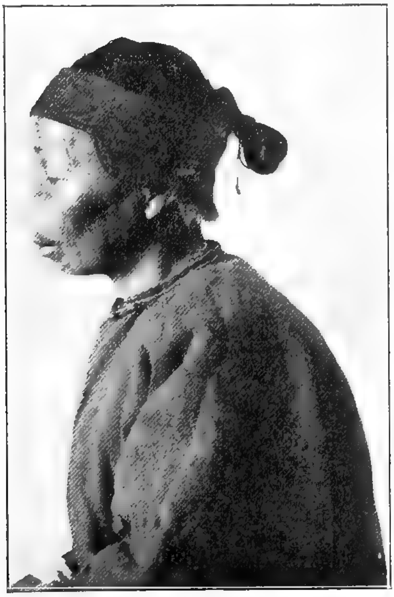

FIG. 227.—Dentigerous cyst. (*By Maxwell.*)

Uterine Fibroids.—See Chapter XXI.

Odontomata and Dental Cysts.—China claims the distinction of what Bland-Sutton calls **the most remarkable radicular odontoma** in his notice. He says of this (*Tumours*, p. 238):

"This tooth was extracted with no little difficulty from a Chinese student aged nineteen by Dr. Davenport of Hankow. It had caused no trouble until two months before extraction, when there was a swelling around the tooth, supposed to be due to an abscess. On a casual examination, the lump on the root of the second lower molar appears as a radicular odontoma; but on section it presents the complex structure of a composite odontoma. The clinical reports contain the significant statement that there were no signs of the lower wisdom teeth."[1]

If we mistake not, this is the first of two such cases reported from China.

Maxwell (Formosa) reports a case of follicular odontoma of the maxilla.

Papillomata.—The common infectious warts are frequent and often multiple, and various papillomata are of frequent occurrence, especially those of the region of the anus—the common, flat venereal warts; and frequently at the head of the penis and the margin of the prepuce show the more filiform, drier variety.

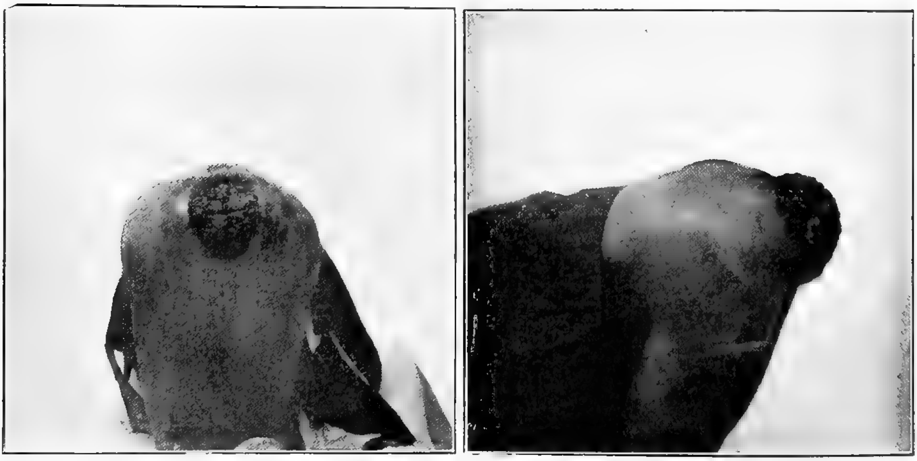

FIG. 228.—Large anal warts. (*By O. L. Kilborn, Chentu.*)

"The accompanying photographs show a wart, or rather a pair of warts, which were remarkable perhaps for their size and location. The patient was a male of about eighteen years. He was one of three cases presenting themselves in the dispensary for treatment within a few days of each other. This one not only did not need to be coaxed, but insisted upon being taken in for operation. He complained of great pain, especially on defecation, with slight bleeding. On examination the mass, which was foul and discharging somewhat from its fungating surface, was found to be about 6 inches long, 3 1/2 wide, and 2 inches high. It was divided completely from before backward into two lateral halves, attached one on the right and the other on the left side of the anus. The pedicles were considerably shorter and narrower than the fungating mass.

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[1] For full report see *China Medical Journal*, XXI, 54.

"Under chloroform the two masses were excised and the skin drawn together as much as possible with stitches. Healing took place readily, and he went out happy in a few days' time.

"There were evidences of an old gonorrhœa of the anus and rectum, which pointed doubtless to the origin of the warts."—*O. L. Kilborn, Chentu.*

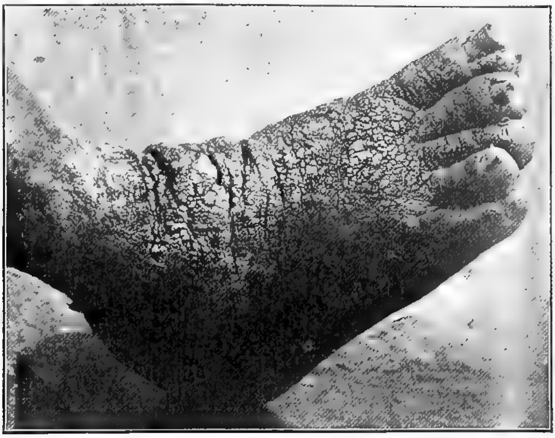

FIG. 229.—Verruca filliformis. The leg is the seat of elephantiasis. (*By Jefferys.*)

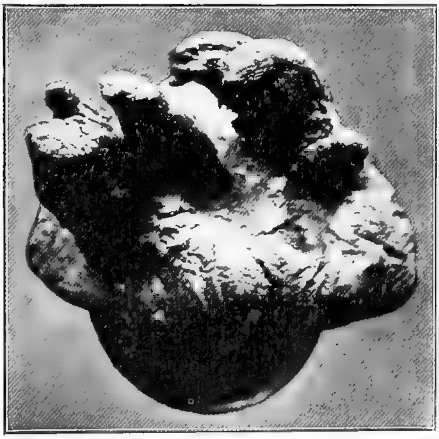

FIG. 230.—Cornu cutaneum, on the buttocks. (*Museum of St. Luke's Hospital, Shanghai.*)

A special variety of papilloma, not as well known, was described by us in the *China Medical Journal*, Vol. XVIII, p. 20.

It is usually found in connection with old elephantiasis, in which the skin of the ankles and legs has been long subjected to unnatural conditions. But a similar condition is found in certain old eczemas and other congestion-producing affections. We have seen this condition frequently in China. It consists of filiform warts of the skin; in one case also nodular in parts. Each wart stands from an eighth to half an inch above the surface and is distinct from those which stand closely packed about it. It is perhaps the condition described in Hyde's book as "Veruca filiformis," or a modification thereof. In each case it was on the leg; was associated with impaired circulation in the limb and was a matter of years. It is in itself painless, and in our hands has been absolutely resistant to treatment, though we have not been able to test it in the wards. It is dry, except in the eczematous patient when it shares the general weeping condition of the rest of the leg. Papilloma of the bladder is remarkable for its absence.

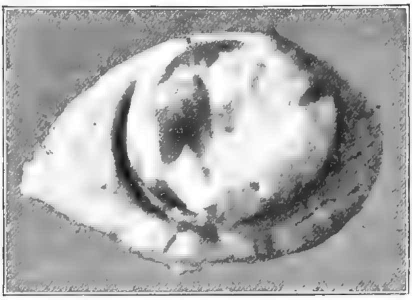

FIG. 231.—Callositas of the ball of the foot. *(Case of C. H. Barlow, Huchow. Photo by Jefferys.)*

Horns.—The condition occurs, but not with any special frequency. A good specimen is shown in the illustration, the growth was taken from the region of the buttocks. We have seen it upon the foot, and small ones on the scalp.

"A young man, who through repeated bleedings had his life endangered, was relieved from his trouble, a nasal polypus which projected through the meatus in the form of a horn nearly 3 inches long." -*Olpp, Tungkun.*

Adenoma.—Adenoma has not been frequently reported with careful differentiation. Maxwell, Formosa, reports two cases of adenoma of the rectum, the clinical form being that of multiple pedunculated tumours. On microscopic section these showed a well-marked band of connective tissue between the rectal epithelium, which was normal, and the adenomatous growth. Fibro-adenoma of the breast, though less common than at home, is found.

"Death from shock following removal of huge cystic adenoma of breast in child of four months."—*Cole, Ningpo,* 1906.

Carcinoma. That carcinoma is **in large amount** among the Chinese is certain. We find it from the benign epithelioma cutis to the most destructively malignant cancer, and in every conceivable situation. As yet the internal cancers are not frequently presented to the foreign physician for treatment, but that they exist we are aware by infrequent or accidental encounters. In our own practice we have operated on cancer of the breast ten times for any one other variety.

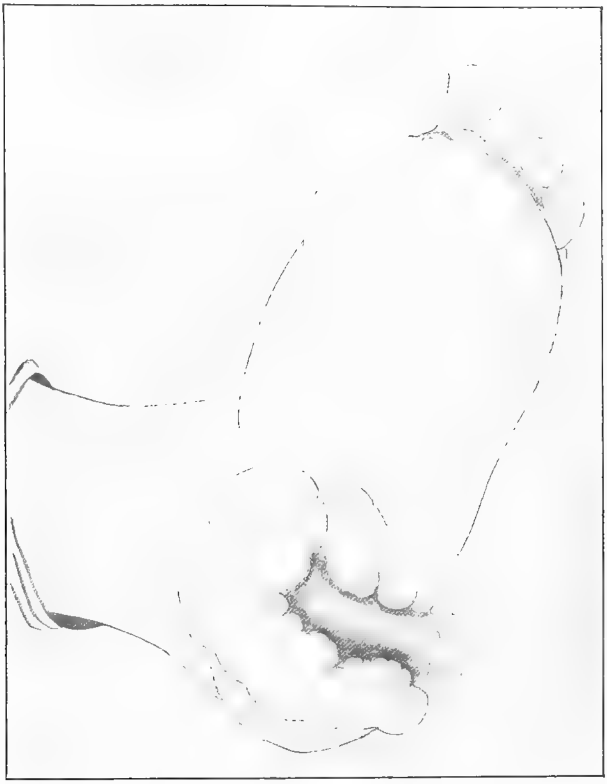

FIG. 232.—Epithelioma of sole of foot. Man, fifty-six years, duration three years. The growth extends over the ankle-joint. Ulceration and enlargement of inguinal glands. (*By J. E. Kuhne, Tungkun.*)

"**Tumours** of all kinds, and often of immense size are common. The chief operation in the Women's Hospital is for Cancer of the Breast."—*Main, Hangchow,* 1907.

"A faithful friend of one of the missionaries, a cat aged eighteen years, was operated upon for a malignant growth of breast, and the sections were undoubtedly carcinomatous; recurrence took place, and the animal was then put out of its sufferings. This occurrence in animals of advanced years fits in with the observations of others."—*Cole, Ningpo.*

It should be emphasised that carcinoma of the alimentary tract, from the cardiac end of the stomach to the last inches of the colon, is extraordinarily rare.

"Four cases of malignant disease. Three of them—cancerous tumours of the stomach, breast, and colon—proved rapidly fatal; the fourth, an osteo-sarcoma, was cured by a timely amputation."—*Smyth, Ningpo.*

"Malignant New Growths.—Fourteen cases have been under treatment. As so much interest is now being taken in this subject and the question of native races suffering from the disease being in dispute, I append a list of all our cases with particulars, the diagnosis in all but two having been settled microscopically by Dr. Hunter:

"European male, aged forty-two; dis. of omentum, etc.
European female, aged thirty-six; chorion epithelioma.
Portuguese female, aged forty-one; sarcoma of neck.

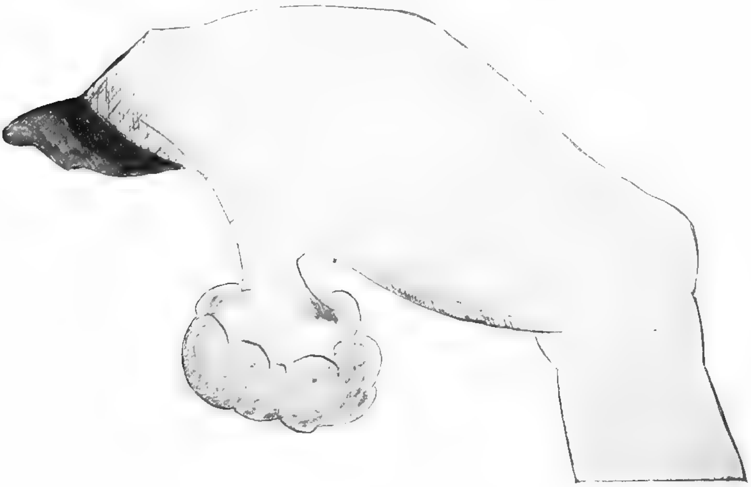

FIG. 233.—Pedunculated epithelioma of the thigh. Three years. Male, sixty-four years. Began as a small nodule which gradually enlarged. Present state: sides and under surface ulcerated in consequence of Chinese treatment for the last three months. Skin of thigh much infiltrated. Left inguinal glands enlarged. (*By John E. Kuhne, Tungkun.*)

Portuguese male, aged thirty-eight; sarcoma duodenum and liver.
Chinese male, aged thirty-three; epithelioma of penis.
Chinese male, aged thirty-two; colloid cancer of mesentery.
Chinese male, aged thirty-nine; carcinoma of liver.
Chinese male, aged fifty-three; epithelioma of tongue.
Chinese male, aged forty; carcinoma of liver.
Chinese male, aged twenty-eight; sarcoma of leg.
Chinese male, aged fifty; epithelioma of penis.
Chinese female, aged thirty-five; scirrhus of breast.
Chinese female, aged thirty-nine; sarcoma hard palate, etc.
Chinese female, aged twenty-two; sarcoma of arm.

"The last case was one of recurrence after an operation done here in 1904. This Table shows that Chinese at any rate do not enjoy any immunity over other races."—*Hongkong Health Report*, 1905.

During the past year, a number of new growths have been examined. Most of these have been sent to me for diagnosis by medical men in Hongkong, and along the coast of China. The following is a list of the tumours which have been examined:

"I —Malignant New Growths.

"1. Primary cancer of the liver (three cases.)
2. Diffuse colloid cancer of stomach.
3. Scirrhus cancer of the pylorus (two cases).
4. Cancer of the lungs, (two cases.)
5. Cancer of prepuce, (three cases).
6. Glandular cancer of cœcum.
7. Epithelioma of penis (two cases).
8. Cancerous metastasis in Cervical Glands.
9. Spindle-celled sarcoma of arm.
10. Chorion epithelioma of uterus."

—*Public Mortuary, Hongkong*, 1905.
W. V. M. Koch.

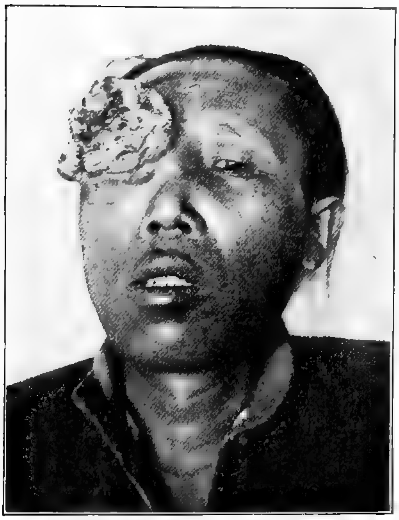

FIG. 234.

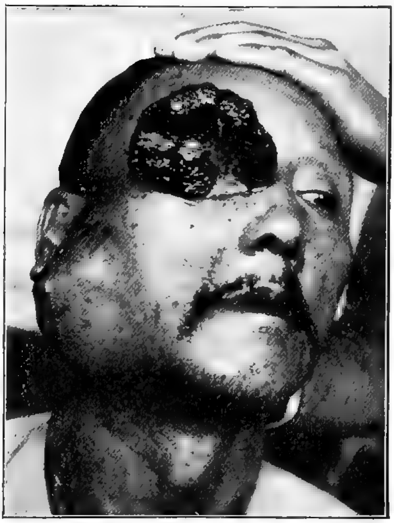

FIG. 235.

FIG. 234.—Epithelioma of the orbit. (*By Jefferys.*)
FIG. 235.—Epithelioma of the orbit with metastasis to the parotid region. (*By Jefferys.*)

Treatment.—The radical operation is frequently allowed, and encouraging success attained. But even in this form of tumour, and certainly in all other forms, so reluctant is the Chinese to submit to operation in the early stages of any affection that the characteristic of carcinoma in China is its advanced condition. It is only within recent years that any conception of the danger of the disease has begun to grow in the mind of the native; but we have noted, especially in the Shanghai community, a beginning understanding of the fatality of the disease and the error of delay. So that even well-to-do women present themselves from time to time and submit to radical procedures, especially for breast cancer. These, however, are not in that earliest stage of first recognition where the best results may be hoped for, being already three months or more old and the ramifications of the tumour fairly extensive, even if seemingly more or less restricted.

Cirrhus carcinoma is the commonest breast variety here. Of encephaloid we have but one specimen in the museum of St. Luke's Hospital, Shanghai. The other frequent forms of carcinoma which present themselves for operation are of the lips and tongue, of the penis, and of the rectum, of the uterus and, in Formosa, of the mouth, possibly associated with the use of the betel-nut. In cancer of the penis the head is usually involved and amputation, with or without operation on the groin glands, is often satisfactorily successful. It must be distinguished with care from gumma and chancroid, in which differential diagnosis, besides the microscope, we recommend the prompt therapeutic test. But to the old hand, the cauliflower appearance, the dryness and perhaps the warty character of the carcinoma is sufficient evidence. In one instance we have performed complete amputation of the organ, implanting the prostatic urethra in the perineal body. The scrotum was removed and the testicles placed in the loose subcutaneous tissue of the inside of the thigh. The final result was in appearance a woman, and in urinary function very satisfactory. The patient was old and there was no real loss.

"Epithelioma of the penis is a comparatively frequent disease, and we have made a complete amputation in a number of cases during the year with very satisfactory results with one exception, where the operation was very extensive and the patient not in a good physical condition."—*McCartney, Chungking.*

Carcinoma **of the rectum** is usually beyond hope of successful operation. We have attempted several times the radical operation—once with removal of the coccyx and an attempt at radical removal of the lower rectum and anus. Recurrence took place almost at once. In another instance, the patient was sent us by Taylor of Yangchow. Kraske's most radical procedure was undertaken. The cancerous stricture, which admitted the little finger with difficulty, lay an inch to 2 inches within the anus and seemed movable. But after removal of the lower sacrum and coccyx and a thorough inspection it was found that the cancer involved the sacral prominence and the posterior walls of the bladder and prostate. For the relief of symptoms, the stricture of the bowel was removed and a tube introduced until the skin wound should have healed. The patient got back to his home, but with little prospect for more than that.

"**Cancer of the Nose. Inoperable.**—This woman had two sisters who died from the same disease." *Mackenzie, Foochow.*

It is a rare thing indeed to have the opportunity to operate for cancer of the uterus, because never seen early. We have had one such opportunity, but only after a prolonged and exhausting hæmorrhage was permission obtained.

The theory of Bazin and Ch. Bouchard, who hold that cancer is the result of gout, is absolutely disproved in China, where gout is almost entirely absent while cancer is exceedingly prevalent.

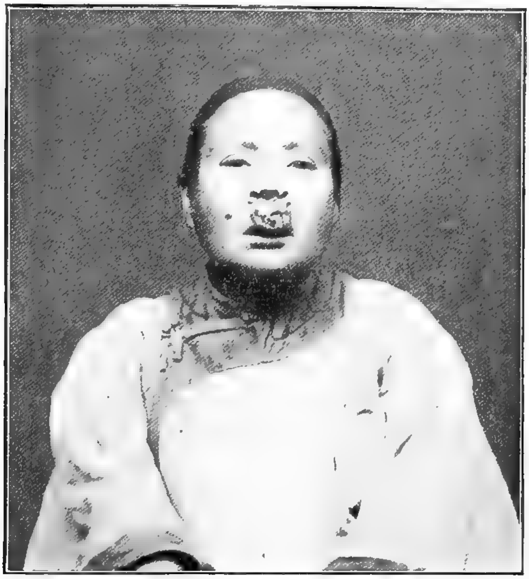

FIG. 236.—Epithelioma of lip. The patient's two sisters also had malignant disease. (*By M. Mackenzie, Foochow.*)

Teratoma (Dermoids).—The interesting subject of dermoids is beyond the limits of this chapter. They exist in average frequency, as do the other congenital malformations—harelip, cleft palate, spina bifida, meningocele, and so forth. Of those which have been reported we might select the following as typical.

Pelvic Dermoid Obstructing Labour.[1]

B., age twenty-eight, multipara, a heavy opium smoker, was admitted to the Tainan Hospital on March 2, 1903. Two previous pregnancies: 1. Four years before, an easy labour at full term. 2. Two years before, ending in a miscarriage at the fifth month. No evident cause for miscarriage, and convalescence therefrom normal. Present pregnancy appeared normal up to the last month, during which she suffered from much abdominal pain, for which she could not account. Labour commenced twenty-four hours before I was asked to see the case; the membranes had ruptured for twelve hours and the pains, good at first, had now become infrequent and weak. An attempt with the forceps to extract the child had failed, as also had two attempts to perforate the head. No fœtal movements could be felt or heart sounds heard. *Per vaginam.* Head presenting in the transverse position, face to mother's right, left hand by the side of the head, which was not engaged in the true pelvis. Preventing the descent of the head was a large mass, soft and doughy, in Douglas' pouch, pushing the head forward. Patient was moved into hospital and, under chloroform, a trochar was introduced through the posterior wall of the vagina into the swelling, and a small quantity of thick pus escaped through this. The trochar opening was enlarged till the finger could be passed through the opening and a large quantity of dermoid material was thus removed. By pulling on a long lock of the hair, a large mass was brought down, ligatured and cut off. This proved to be a breast-like protuberance, from the nipple of which the lock of hair grew; with this was another mass of tissue in which was imbedded bone and tooth-like masses of cartilage.

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[1] Maxwell, Formosa, *China Medical Journal,* November, 1908.

A Recurrent Thyro-glossal Dermoid.[1]—In November, 1905, a young native scholar, aged twenty-two, of Nanking, was shown at a clinical meeting of the C. C. M. M. A.

His father gave the following history: Seven years since, a small swelling was noticed underneath and behind his tongue. As the swelling gradually increased, his speech became less and less distinct. The eating of solids also became increasingly difficult. After six years' growth, *i.e.*, in 1904, it was such a large size that the poor fellow could neither eat nor speak. He was taken to a Hospital in Nanking, where the swelling was removed.

His present condition was the result of twelve months' growth.

The consensus of opinion of the clinic was that it was a ranula. With this diagnosis he was sent to us at the Wesleyan Mission Hospital, Hankow.

We then found a moderately tense, fluctuating swelling occupying the whole floor of the mouth. It was quite median in position. The tongue was pushed up, touching the hard palate. This was the result of the swelling protruding forward and upward. The genio-hyoid muscle had prevented the swelling bulging into the neck between the mandible and hyoid bone. This is unusual.

The exposed and protruding portion was covered with shiny mucous membrane. This was not adherent to the swelling beneath. The whole swelling could be moved slightly from side to side.

If pushed backward the patient ceased to breathe. Examination revealed the absence of both pain or tenderness. It moved slightly with deglutition. He could neither speak nor eat solids. Liquids could only be introduced at the side of his tongue.

We were unable to cut sections. By microscopic examination the wall of the cyst was thick and hard. Its interior surface was corrugated, presented the appearance of, and also felt like, rough skin. From the internal surface we discovered numerous hairs growing. By a microscopic examination of the contents we found fat cells, flattened epithelial cells, hair and débris. The cyst emerged from between the genio-hyoglossus muscles and about the genio-hyoid.

This is a fairly typical case of thyro-glossal dermoid. They often lie latent until puberty, and then, for some unexplained reason, they rapidly increase in size. The report has purposely been held in abeyance, as the youth promised to return immediately if he noticed the slightest suspicion of a recurrence. As it is now eighteen months since he left the hospital, we do not think it premature in now publishing the case. Of course he may have gone elsewhere.

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[1] Tatchell, Hankow (Tayeh), *China Medical Journal*, XXI, 312.

Dermoids of the Testis and Scrotum.[1]—Testicular dermoids have a different origin, as there is proof of their existence in the testis before it descended into the scrotum, and in the case of the horse such dermoids are associated almost invariably with retained (undescended) testes.

My greatest difficulty in dealing with the question was the lack of concrete material. During the last twenty years only two examples have been recorded as far as I can ascertain in English literature, and the Continental publications of the last fifty years furnish under twenty cases. It was therefore with great interest that I received from Dr. Hodge, Hankow, Central China, a testis removed by Dr. Booth, which contained a typical dermoid, accompanied by the following history:

A blind boy, sixteen years old, with an enlarged testis, has been in our blind school (Hankow) for nine years. The boy says his mother told him "he had it when he was born." He had frequent inflammatory attacks of the scrotum following injury, such as crushing against a stool, etc. He came to the out-patient clinic during one of the attacks, which rapidly subsided under an evaporating lotion.

At the operation the right testicle was small but normal in position. The skin over the front of the left testicle was reddened, and a sinus existed at the junction of the scrotum and penis; the testicle appeared as a globular, tense, but elastic mass, as though filled with fluid, and no distinction could be made between the body of the testis and the epididymis. The spermatic cord was thickened.

In the course of the operation some pus escaped from beneath the reddened skin, otherwise the organ was shelled out and removed entirely without any difficulty. The sinus and the adherent skin associated with it was exsected, and the edges of the skin brought together with sutures and the wound drained. The boy made an uninterrupted recovery.

Dr. Booth then goes on to say: On opening the tumour by a longitudinal incision, he found it filled with hair, grease, and a mass of tissue containing a tooth. In the interest of pathological science he and Dr. Hodge resisted the temptation to make a complete dissection, but preferred to place it in my hands for thorough investigation.

The tumour is globular, with a diameter of 5 c.m.; near the lower pole it presents an irregular body. The walls of the tumour are thick and gristly, resembling thickened tunica albuginea, but the whole mass was invested by a delicate tunica vaginalis. The cavity of the dermoid contained the usual sebaceous matter mixed with loose hair, and a sessile body of irregular shape consisting of bone and hyaline cartilage covered with tissue, which to the naked eye looked like mucous membrane. Embedded in the upper end of this tissue there was a multicuspidate tooth resembling those found in ovarian dermoids; its crown still covered with mucous membrane. The soft investing tissue also possessed some delicate lanugo-like hairs. Microscopically this tissue was found to be covered mainly with stratified epithelium; in some parts it exhibited a single layer of columnar and subcolumnar cells. Sebaceous glands were fairly numerous.

The soft irregular body, to which reference has already been made, lying near the lower pole of the tumour but outside its capsule, received particular attention, because I thought that it might probably turn out to be the true testis. I made a very careful search for traces of the vas deferens, but this was unsuccessful, due partly to the fact that formalin solution makes the tissues hard and brittle, thus rendering them unsuitable for minute dissection. The tissues were submitted to thorough microscopic examination, but no testicular tissue could be made out; but the mass consisted of a collection of round cells surrounding and isolating large giant cells; the disposition of the cells and their character recalling that seen in tuberculous disease of the epididymis, but tubercle bacilli were not detected.

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[1] J. Bland-Sutton. From the Archives of the Middlesex Hospital, London.

It disappointed me greatly that I was unable, even after the most critical examination, to determine whether the dermoid was situated inside the tunica albuginea and replaced the testis, for I failed to find any of the usual anatomical guides, such as the epididymis or the vas deferens. Though this specimen is interesting in itself, it is useless in helping to solve the source of testicular dermoids.

In its gross anatomy and structural details this tumour reveals the usual features of dermoids growing in relation with the testis. Some, it is true, are more complex and contain nerve cells, as in one very carefully reported case examined by Cornil—in a "bud" growing from the cyst-wall a collection of nerve-tissue containing ganglion cells was detected.

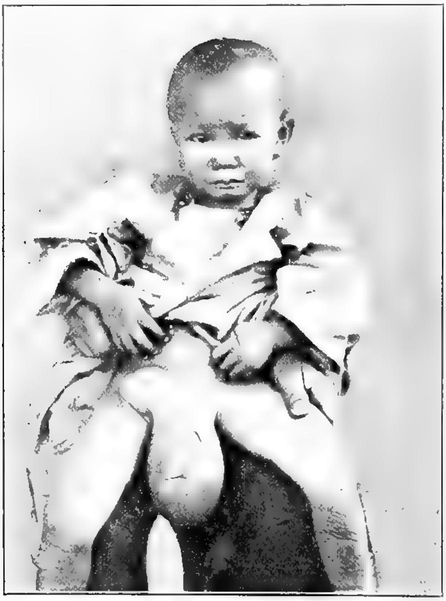

FIG. 237.—True dermoid of testicle. (*Photo by J. E. Kuhne, Tungkun, showing the patient before operation.*)

In its clinical details the tumour did not differ from its forerunners. There is a remarkable uniformity in this respect. In nearly all the recorded cases enlargement of the testis was observed at or shortly after birth. In a fair proportion the patients were deprived of the affected organ in early childhood. In those who were not operated upon during infancy, the tumor seems to have caused little inconvenience; indeed it appears to lie dormant till puberty, then bruises and knocks or abscesses and sinuses cause trouble and lead to surgical interference.

Dermoid of the Testicle.[1] , The patient was a boy of four; the parents, people from the country, are young and show no trace of syphilis; they have had three children, one who died of plague when four years old, another who lived a few days only, and this one. At birth the scrotum, or rather the testis, was the size of a small orange, not hard, says the mother. The swelling enlarged gradually, and this year in February the inguinal glands got involved. The child, nursed by his mother, is well otherwise. The penis is easily felt and well seen in the photo; the black line being the prepuce. The growth gave an elastic feeling, and being somewhat transparent let us at first think of an infantile hydrocele.

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[1] Kühne, Tungkun, *China Medical Journal*, March, 1908.

A puncture was made on June 22, and some bloody serum evacuated. A second one was made three days after; this time introducing the needle deep into the tumour; some pus came through the cannula which microscopically showed crystals of cholesterine.

The parents wanted to have an operation performed, and Dr. Eich, who for a short time was prevented from using his right hand, asked me to operate. We at first made an incision over the inguinal glands. Having found and tied the spermatic cord we removed the glands as thoroughly as we could; prolonging the incision downward, the testis was easily removed as a whole, leaving the left testis *in situ*. The child as first did well, the wound of the scrotum healing rapidly; the wound over the glands, however, gave some trouble, and when the child left the hospital some twenty days after, a swelling was felt, proof of a recurrence of the growth. We have not examined the growth and would be very grateful to get your opinion about it. The specimen has been for a night in alcohol, and has shrunk somewhat; afterward it was put in formaldehyde.

Report on Dr. Kuhne's Tumour Specimen.

The specimen consists of a regular oval tumour of the entire testicle, about 6 inches long by 3 1/2 inches broad and circular in the transverse section. On longitudinal section there is first a thickened serous covering, next a half inch or so of organized blood clots and within this again, series of two or three thin shells of cartilage and some true bone, and including between them blood-vessels, testicular tissue, sarcomatous patches and epithelial detritus, and in the upper half some matted short black hairs. The cord is thickened and adherent to its surroundings and especially to some of the inguinal glands, which on section show patches of pigmented round-celled sarcoma. For confirmation of this point, a section was submitted to Dr. Alfred Moore, of the Shanghai Health Office, who reports as follows:

HEALTH DEPARTMENT OF THE SHANGHāI MUNICIPAL COUNCIL.

Laboratory Report No. 5297.

This tumour presents the appearance of a pigmented round-celled sarcoma. May there not have been some sarcomatous elements in the associated testicle tumour? Stained specimen herewith.

A. MOORE,
Asst. Health Officer.

In Dr. Cole's specimen (see his own report thereon below) the testicle proper is not involved. We also reported (Fig 242) a case under our own care, which was inoperable at the time of first inspection, but on incision proved to consist of sarcomatous tissue and thin bone plates as in Dr. Kühne's specimen.

Dermoid of Testis.[1]—Patient aged thirty-six, right side of scrotum from child hood larger than left. Nine months before admission to hospital knocked himself on side of a ferry boat, resulting in chronic discharge from a sinus at bottom of scrotum ever since.

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[1] Cole, Ningpo. *China Medical Journal*, XXII, 81.

Excised, together with adherent skin.

On subsequent examination the body of testis and cord quite normal. Evidently dermoid of paradidymis from facts:

1. Flat bony plates lining walls of cyst.
2. Movable protuberances like tips of fingers.
3. Thick yellowish material (sebaceous type).
4. History of congenital origin, or certainly over thirty years.
5. Testis normal.

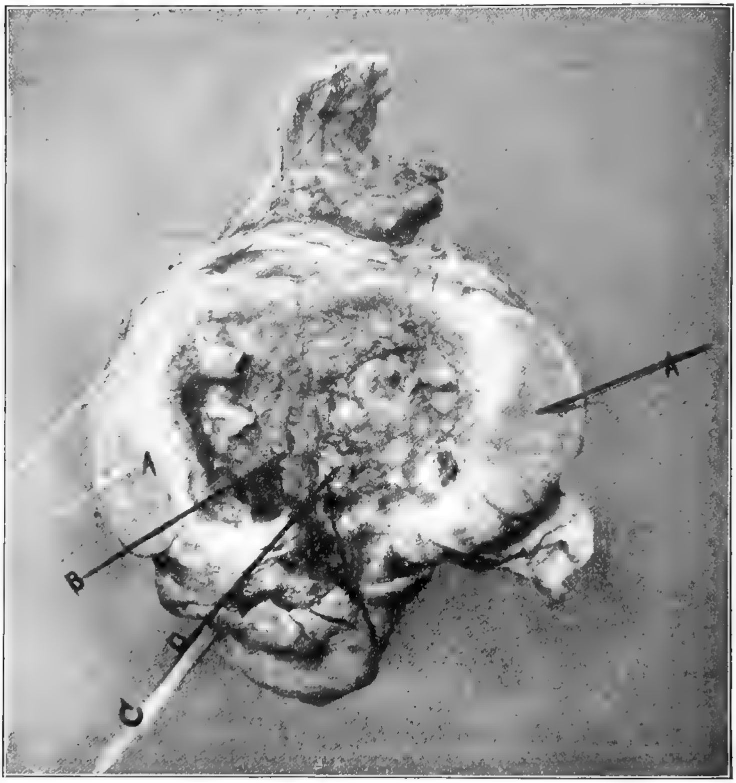

FIG. 238. Teratoma of the epididymis. A. F. Cole's case, Ningpo. *A*, Testicle; *B*, bone; *C*, sinus (old) into the tumour; *D*, cord. (*Photo by Jefferys, Shanghai.*)

No microscopic examination was made of the cyst walls before the specimen was deposited in the Pathological Museum of the China Medical Association. No hairs were found.

In Bland-Sutton's work on "Tumours, Innocent and Malignant," fourth edition, page 533, the following is found:

"The rarity of testicular dermoids may be gathered from the fact that as far as I can ascertain, during the last twenty-five years three examples have been recorded in

England, and of these one came from India, and another from Central China was sent me by Dr. Booth, and is now in the museum of the Royal College of Surgeons."

Ovariotomy was performed by Dr. Cormack for a huge dermoid which with fluid contents weighed 100 pounds. Bones, teeth, and a rudimentary eye were found. The adhesions were very firm and extensive and the operation tedious, but the patient made a good recovery.—*London Mission Men's Hospital, Hankow*, 1900.

Post-rectal Tumour.[1]—The accompanying photograph, taken by Dr. Cousland, clearly depicts a very interesting case seen at the "out-patients," Shantung Road Hospital. Patient, a young man of twenty-four, well nourished and in good health, presented himself for treatment owing to the inconvenience of having such a large swelling on the buttock. Apart from the inconvenience and the feeling of fullness and aching before defæcation, and the fact that one or two superficial ulcers, caused by native treatment, constantly discharged watery pus, the patient had nothing to complain of. He said that the tumour began to grow from babyhood.

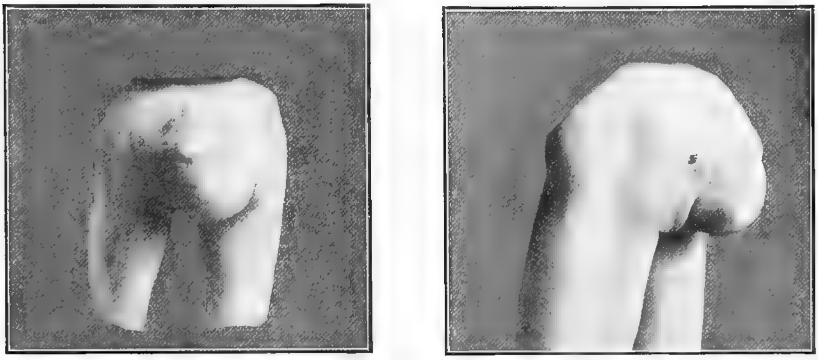

Fig. 239.—"Post-rectal tumour." Probably a cystic tumour of the post-anal duct. (*By C. J. Davenport, Shanghai.*)

The points of extreme interest about it were: 1, that he stated his father was similarly affected; 2, a very marked impulse took place on coughing. The whole mass felt like a large protrusion of the bowel, but no part of it could be replaced by pressure. Examination by rectum showed that the bowel was normal and apparently formed no part of the tumour. The sacral bone showed no traces of being bifid, though the coccyx was considerably everted and turned to the side. The walls of the tumour, for the greater part, felt thin and elastic. A thick, irregular, oblong plate of bone occupied the posterior wall to the extent of about 4×3 inches. Over this plate of bone the skin was thickened and bossy. No hair grew on the skin. Operation was thought inadvisable. The diagnosis lay between a teratoma and a dermoid, the tumour had evidently started from the inside of the pelvis, behind the rectum, within the hollow of the sacrum. I am inclined to think the growth was of a nature of a dermoid.

We have seen a similar case which we believe to have been identical in structure with this.

The patient came from the neighbourhood of Hangchow, by direction of some former patient and friend, suffering from a post-rectal tumour of five years' slow and steady growth. It began as a small lump just back of the anus, non-painful but exceedingly inconvenient. It involved a large part of the sacrum and hung as a pendulous mass covering the anus. There were a couple of ulcerated points, perhaps the result of the traumatism inevitable through its location. The ulcers were not deep and did not communicate with the tumour proper. The patient insisted upon operation, which we undertook rather unwillingly, believing that the bowel was herniated into the tumour, and confidently expecting a difficult piece of dissection, and a still more difficult wound closure. Moreover, it was impossible to foresee to what pelvic depths the tumour might lead. Operation was performed in two stages. In the course of the first operation the lower two-thirds of the sacrum were removed and the contents

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[1] Davenport, Shanghai. *China Medical Journal*, Nov., 1908.

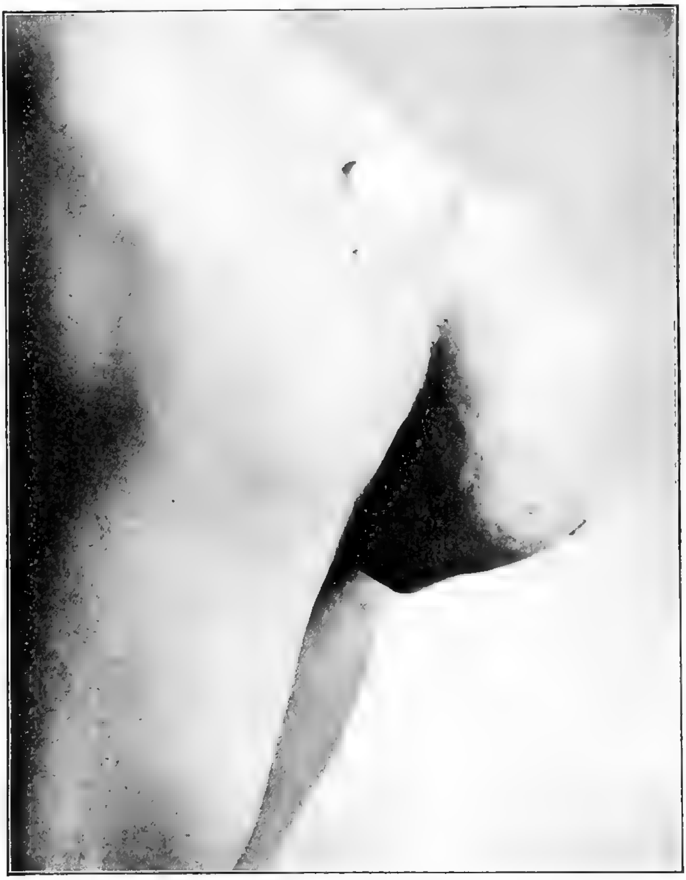


FIG. 240.—Cystic tumour of the post-anal gut. Before operation. (*By Jefferys.*)

of the post-rectal space. The tumour consisted of numerous, large and small, cysts lined with rectal mucous membrane and containing a thick, brown mucoid substance. There was no apparent communication of any of these with the gut. Some of the larger and more superficial cysts were covered with thin and flexible bone plates, resembling the structure of a fetal skull. There was a generous blood supply, but readily controlled. Later on another cyst was found and dissected out, a cyst which was thought at the time of the first operation to be connected with the rectum, but proved otherwise. Finally the condition of the patient was most satisfactory, though we should rather expect a benign return owing to the further development of small, overlooked cysts.

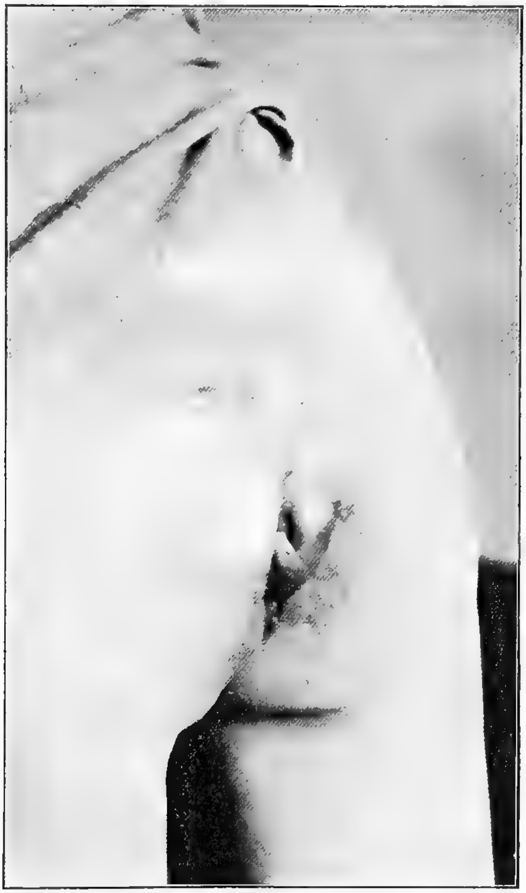


FIG. 241.—Same, after operation.

Ashhurst reports in his *System of Surgery* several of these tumors and notes the fact that hernial protrusion occurred in some and that others were found to extend even into the abdominal cavity by the route of the pelvis. It is here called *cystic tumour of the post-anal gut*, and is stated to be a form of teratoma. In the case of finding hernia in the body of the tumour, one would have the greatest difficulty in obtaining a skin cover for the same, as the skin over the advanced tumour is not fitted for covering—let alone retaining—a hernial protrusion and the situation for a hernia most unfortunate. Moreover, there would be no radical cure available. The tumour in this case supports the gut. As to going up into the abdominal cavity, we think one should be able to anticipate such a condition by careful rectal and bimanual palpation. We do not think the X-rays would be of material assistance. As far as the particular case reported goes, there was no special difficulty encountered, though the operation was extensive and all round the rectum, as it were. The patient had perfect control of the bowels throughout. The principal complication was the pain experienced on dorsal decubitus.

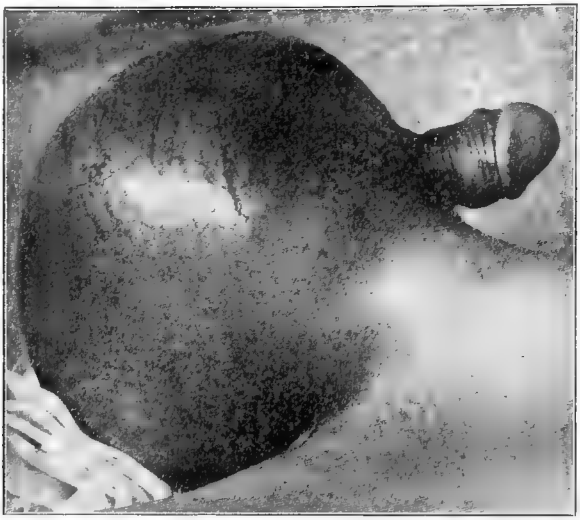
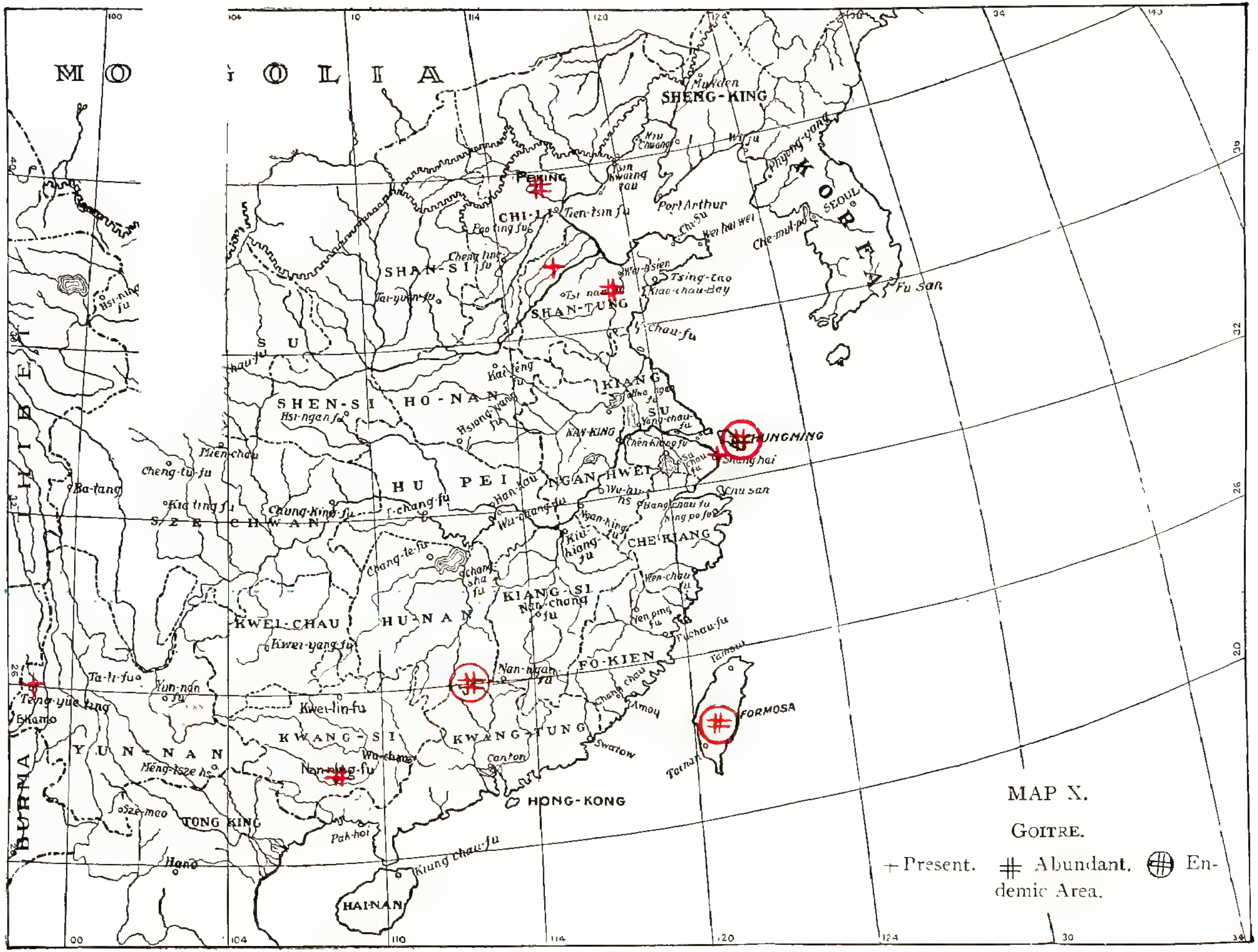


FIG. 242.—Chondrosarcoma of testicle and cord, extending into abdomen. The tumour contained thin layers of bone and cartilage enclosing pulpy cell masses and clotted blood. Scrotal tumour was ten inches antero-posteriorly and eight inches across. (*By Jefferys.*)

Tumours of the Testicle.—See under Dermoids, and also Chapter XIX.

Hydrocele.—See Chapter XIX.

Echinococcus Disease (Hydatids).—Echinococcus disease has been seen among the Chinese and recently reported (Young, Peking and others). The impression seems to be that it is not frequent, but it is



MAP X.

GOITRE.

+ Present. ⩩ Abundant. ⊕ Endemic Area.

certainly present. Bland-Sutton says, "In Asia the disease is known. It occurs in India, though it is far from common;" but no reference is made to China.

Goitre.—Five extensive foci of true goitre (Thyroid Adenoma) have, so far, been reported in China (See Chapter II and map); one of these by S. C. Lewis (Chenchow, Hunan) who says:

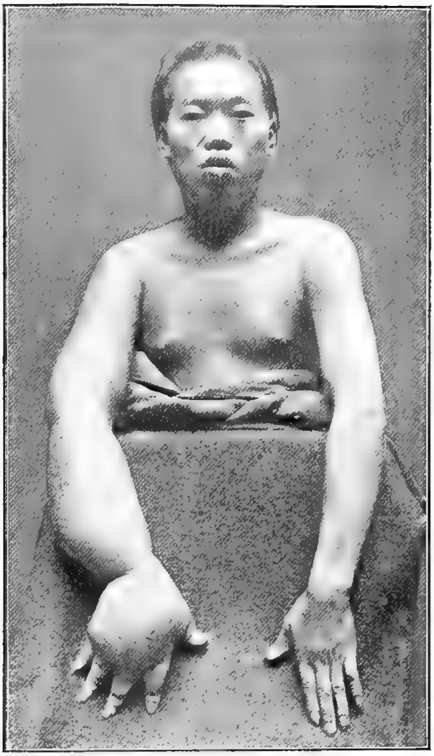


FIG. 243.—Elephantiasis vera congenica. (E. vera mollis, Virchow.) (*By R. Wolfendale, Chungking.*)

"One of the most interesting parts of my journey from a medical standpoint was the finding of a real focus of goitre. I was making the journey over the mountain from Lanshan to Lienchow, a two and a half days' trip. Nearly at the top of the mountain is a village of considerable size, and as I sat in the rest-house and passed through the village I counted thirteen persons with greatly enlarged thyroids. I had seen nothing of the kind along the way and am sorry that I did not make a longer stay and find out more of the history of this phenomenon. Two or three of the villagers informed me that nearly all of the grown persons of the village had it, that some had dyspnœa, but that most of them had little or no distress from it and had it for years. They all drink from the same mountain spring, which they did not believe had anything to do with it since thousands of carriers drink from it and do not develop goitre. However, it must contain that which changes or influences the thyroid gland so as to produce a great enlargement. From my superficial observation I should say that of those I saw there were about three women to one man, and I should judge that few if any were under thirty years of age."

The second focus we heard of from a goitre patient who presented himself to Patterson (Shanghai) from Tsungming Island, stating that many people in his neighborhood suffered from the same affection. We have not seen the condition frequently, nor have we any records of its more careful study. Tsungming Island is a low-lying stretch of mud flat in the mouth of the Yangtse, populated by farming and boating peasants and subject to more or less frequent floods and inundations.

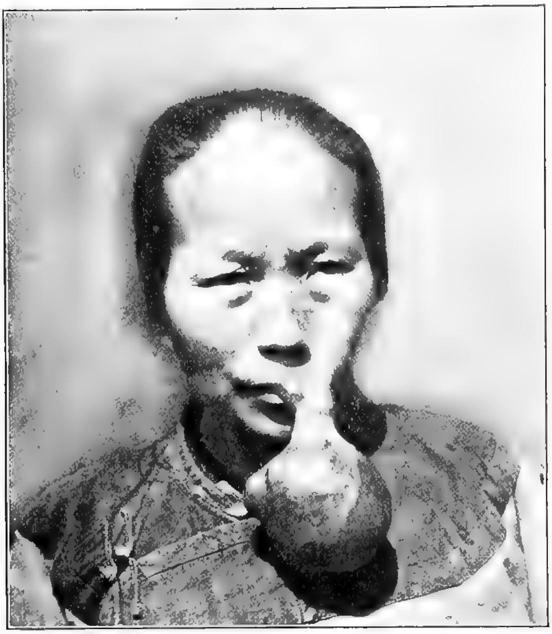


FIG. 244.—Pedunculated fibroid. (*By J. Butchart, Luchoufu.*)

Formosa is the third focus. In certain of the mountain villages almost all the inhabitants have the disease.

Certain **special tumours,** either by reason of their frequency as compared with the same in the home lands, or by reason of their greater peculiarity to China, are the following:

1. All forms of elephantoid tumour formation. (See Chapter VI.)

2. The large, pedunculated, so-called fibroma. This is the ordinary fibroma which, from its weight and age combined, has dragged itself away from the seat of its origin and hangs therefrom by a skin pedicle. These tumours abound, are of every conceivable size and shape, grow

from any and everywhere, cause the greatest inconvenience to their hosts, and considerable undeserved reputation to the physician or surgeon who removes them. One never sees one large enough but that some one else

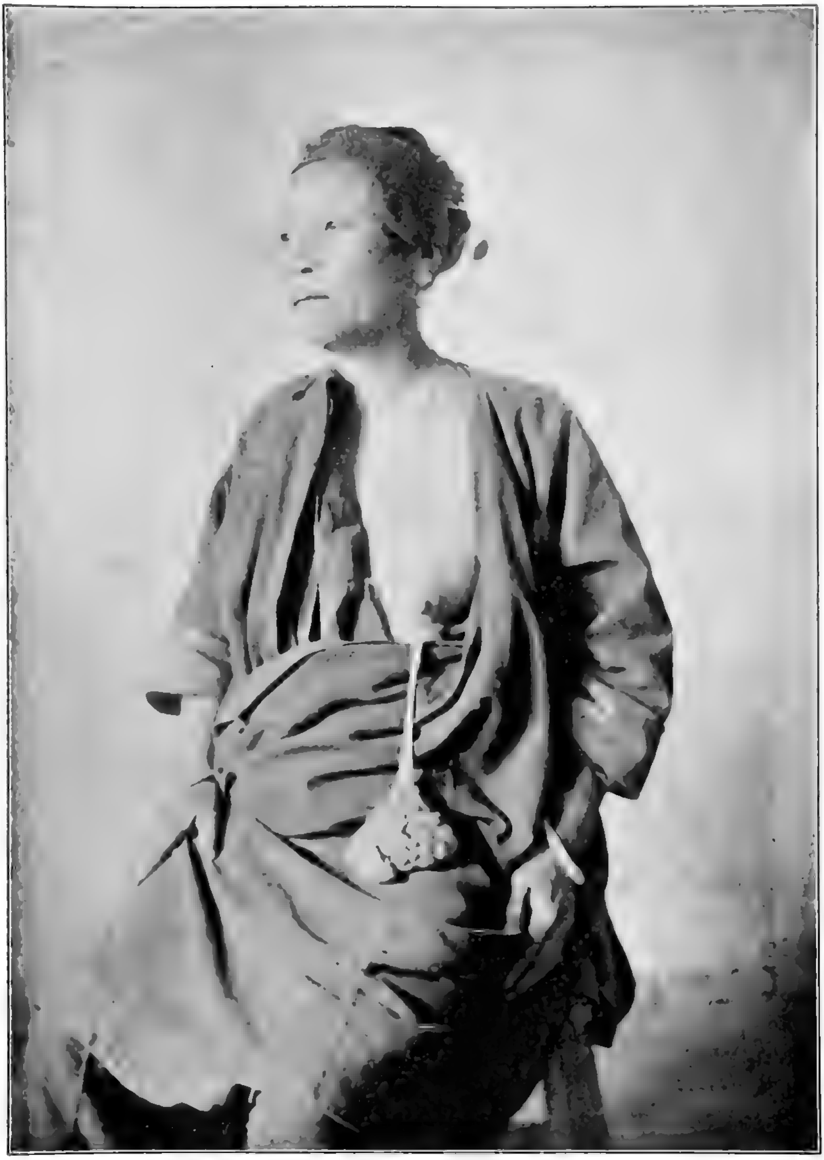


FIG. 245.—Pedunculated fibroma. Thirty years old. (*By Maxwell.*)

has removed one larger. One never has seen one of curious enough origin but what one's neighbour can go one better. Some interesting specimens, which remind one of Pilgrim and his burden, are shown in the accompanying illustrations. Our own largest was reported as follows:[1]

Large tumours are an old story in China and fibroids even larger than that which we present have been reported, though most of our very large tumours are ovarian. Yet each of these cases has its own points of interest. Our patient was in his fifties and a coppersmith by trade. He had first noticed the growth sixteen years previously as a small movable nodule on the right side of the chest and about the fifth rib. It grew steadily and slowly through the years, becoming finally pedunculated and interfering considerably with his work. It was punctured at various times by native practitioners and the scars of these punctures and of the local inflammation they had set up are clearly shown in the accompanying photographs.

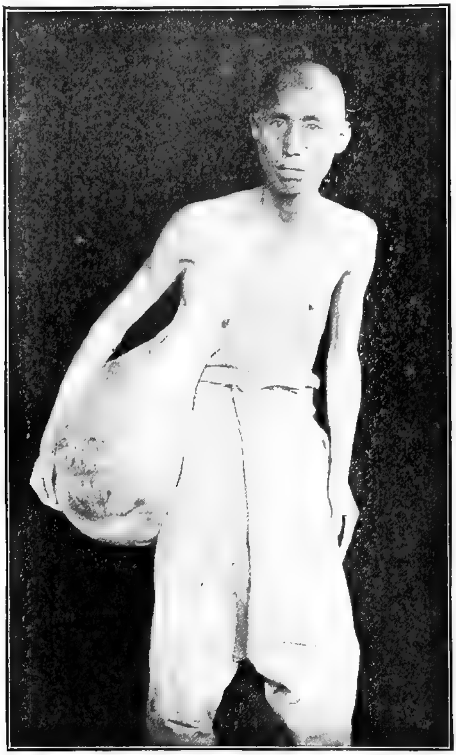


FIG. 246.—Sixty-four pound fibroma. Sixteen years' growth. Standing. (*By Jefferys.*)

In walking, the patient carried the tumour on his right hip posteriorly and leaned far to the left, and when seated he placed it on a low table at his side. When stretched, the neck was only about half the size it showed when relaxed. He wore one pair of trousers of the ordinary variety and another huge pair to include the tumour, and one day, in crossing from the hospital to the out-patient department, he was arrested by a zealous policeman under suspicion of removing hospital property under his voluminous garments. His joy on being searched in our presence and being the innocent cause of complete loss of face on the part of the policeman was delicious to behold. It almost made up to him for having the tumour.

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[1] *China Medical Journal*, July, 1906.

Of course the removal of the tumour was easy, hæmorrhage being controlled by hip-pins with a large rubber tourniquet about them. There was an extensive hypertrophy of the pectoral muscles, which humped itself into an unsightly lump in the healing process and finally suppurated, requiring removal *en masse* at a later anæsthetisation. Otherwise recovery was satisfactory.

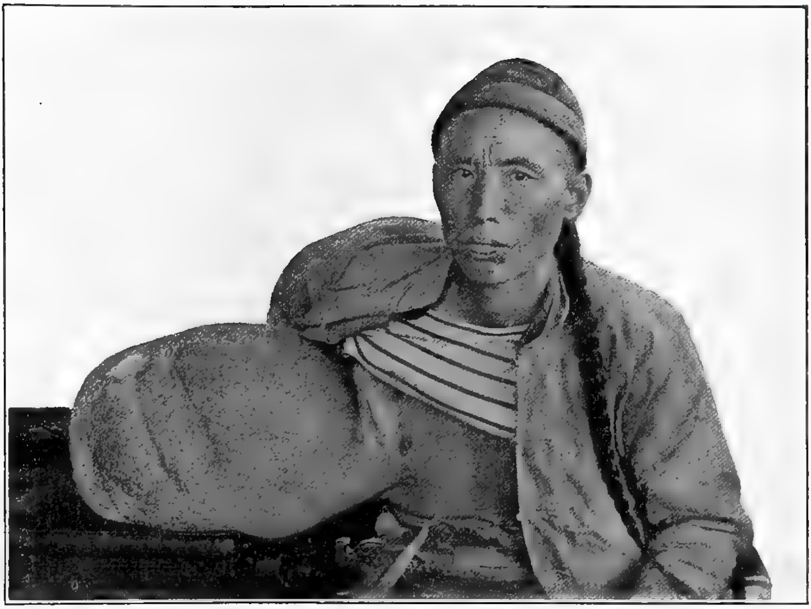

FIG. 247.—Same as preceding, resting.

The patient of course gained rapidly in weight and seemed like an altogether different individual.

The tumour weighed, after removal and exsanguination, 60 pounds; was pretty healthy throughout, skin and all, though the centre was the object of calcareous degeneration. There was a large quantity of oily serum throughout the subcutaneous tissues. The body of the tumour was fibroid.

We apologise for the unscientific presentation of this case. It really was hardly worth a deeper investigation. The lesson we learned was, in future, to remove hypertrophied muscular support at the time of the primary operation.

Chronic **hypertrophy of the tonsils** is met with and frequently calls for operation. A curious case in our own practice was a pedunculated left tonsil (if one may use the expression) in a man of some sixty-odd years of age. It was really a great trial to the patient, since it hung loosely from its attachment between the pillars of the fauces and was swallowed with each mouthful of food. It then obstructed respiration and had to be immediately regurgitated and held in the mouth. Its removal was ridiculously simple and gave great satisfaction to the patient. The shape of the tumour was elongated oval, about 2 1/2 by 1 1/2 inches. The pedicle was 3/4 of an inch, entirely flexible and free.

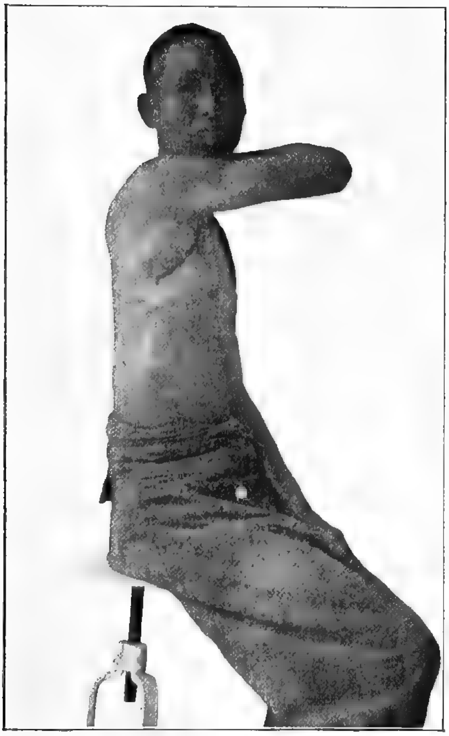

FIG. 248.—Same as preceding, result of operation.

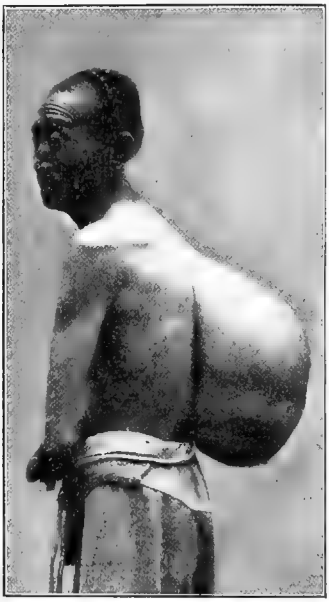

FIG. 249.—Pedunculated fibroma. Pilgrim's burden. (*By J. Butchart, Luchoufu.*)

3. **Chronic lymphadenitis,** or old sclerotic lymph glands with or

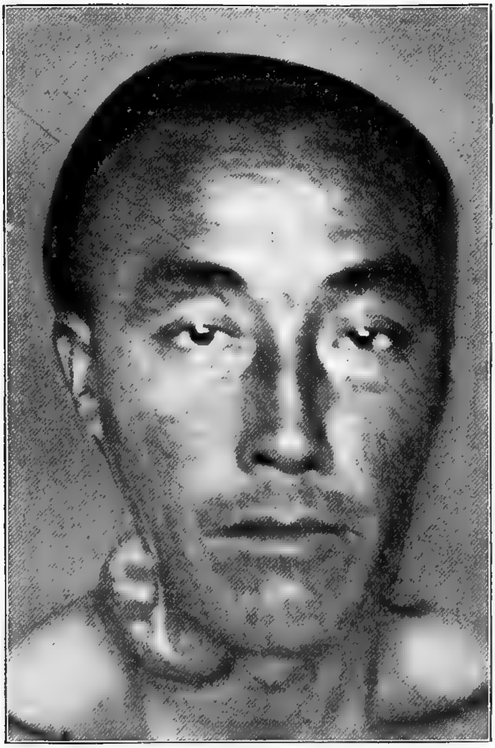

FIG. 250.—Chronic lymphadenitis, five years old. (*By Jefferys.*)

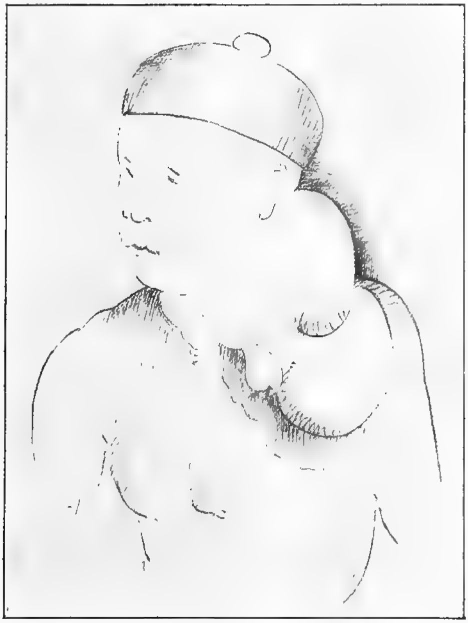

FIG. 251.—Hard **fibroma**. Male, aged ten. Duration, two years. (*By J. E. Kuhne, Tungkun.*)

without calcareous infiltration. These are occasionally seen. They are not, probably, of tubercular origin. They are discreet, sclerotic, or calcareous, in groups of three or more, the size of a pecan-nut each. They are non-painful, are five or more years old, freely movable under the skin, have no tendency to abscess formation or cheesy degeneration, and are readily enucleated *en masse*. They are found in healthy-looking patients and are merely disfiguring; there is apparently no tendency toward malignant development. We have seen them only in the cervical subparotid region.

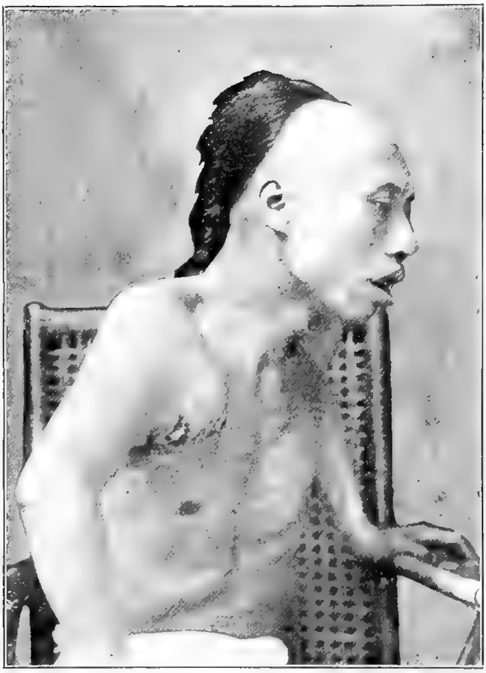

FIG. 252.—Claviculo-scapular amputation of the shoulder, for sarcoma. (*By R. T. Booth, Hankow.*)

Malignant Disease.—We have said already that the surgeon in China is constantly brought face to face with advanced malignant disease, and must answer the question for the patient, Is he willing to operate or not? The most interesting contribution by way of answer to this question is the following study made by Maxwell, of Formosa,[1] in Tainan, and we are in entire agreement with the conclusions of the writer.

[1] *China Medical Journal*, January, 1909.

The Operative Treatment of Malignant Disease in China.

To operate in malignant disease as we see it, is it worth while? Is it worth the terrible nervous strain that is thrown on the surgeon working single-handed when he must tackle a case of extensive cancerous disease, worth the time that such a case takes from his already overcrowded day, worth the patient's undergoing the discomfort and danger of a big operation—is it worth while? This question probably occurs to all of us, especially when we consider how advanced the cases usually are before they apply to us for help; it occurred to us very strongly during the last year of our first term in charge of the Tainan hospital, and we determined to try and answer it. The results have been far more encouraging than we ventured to anticipate when we commenced this enquiry, and we publish them for the encouragement of others placed as we are.

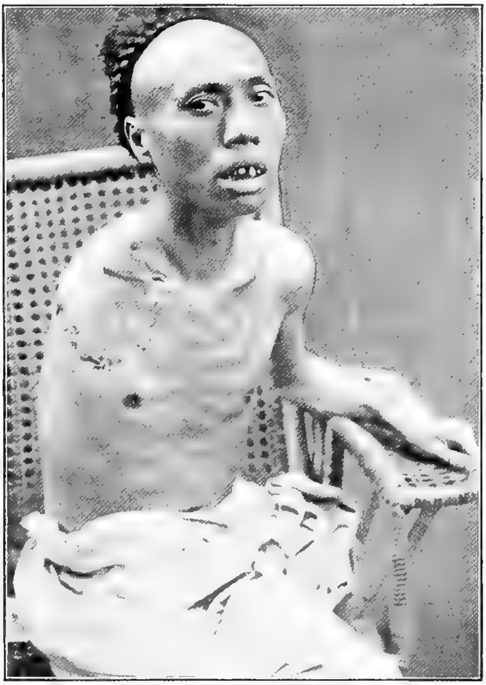

FIG. 253.—Same after operation.

The numbers we are able to place before you are not very large. The first of our seven years was supposed to be devoted mainly to learning the language, and we have only included cases operated on two years or more ago. This paper, then, only covers a period of about four years. We are quite aware that freedom from recurrence for two years is not enough to claim as a cure, but at least it will be agreed that an operation which resulted in complete freedom from disease for two years or more was well worth performing even should recurrence take place after that date. And it was to solve this question of whether it was worth while, that we undertook this enquiry.

We have, of course, excluded from this series all cases of partial operation; in a few cases we believe even such are advisable, and we shall refer to the matter at the close of this paper. We have also excluded all tumours of doubtful malignancy, such as mixed tumours of the parotid, and soft connective tissue tumours where considerable doubt exists whether to class the growth among sarcomata or soft fibromata.

The total number of cases left is thirty-five. Unfortunately, from these we must subtract five cases which could not be traced, leaving thirty only for consideration. There are a further five cases that died apparently from intercurrent diseases. We propose to make an arbitrary division of these five cases. Two cases which died more than a year after operation: one from plague, the other from "fever," we shall include among successful cases; the other three cases, which died within six months of the operation, stated to have died without recurrence, we shall include among the unsuccessful cases; one of these we suspect really had a recurrence and, from whatever cause they died, the result showed that an operation was not worth while.

We acknowledge that this classification is quite unscientific, but all we attempt to reach by this enquiry is *whether the operation was worth while.*

The figures for these thirty cases are as follows:

Total of cases	Recurrences or deaths within six months	No recurrence or death after one year	Percentage of successful cases
30	19	11	36.7 per cent.

Among the recurrent cases was one which only recurred after two and a half year's freedom from evident disease. We should therefore include this among cases well worth operating on, which would in that case bring the percentage of such cases to 40 per cent.

We must confess that we record these figures with great pleasure. They are not as good as they might be, or as good as they would be in more skilled hands, but they are more than sufficient to satisfy us that this class of operation is well worth performing, and it was with a view to solving that problem that we undertook this enquiry.

But now we propose to enter into more detail about the individual classes of cases and the operations to be undertaken. All the cases given here were submitted to careful microscopical examination, and it is interesting to divide them first into carcinomata and sarcomata. The figures for these two are as follows:

Carcinomata.

Total of cases traced	Successful	Unsuccessful	Percentage of successful cases
22	9	13	40.9 per cent.

or including in successful cases one which recurred after two and a half years—45.5 per cent.

Sarcomata.

Total of cases traced	Successful	Unsuccessful	Percentage of successful cases
8	2	6	25 per cent.

NOTE.—From further cases not included in this investigation we incline to think that a larger series of cases would have shown an even smaller percentage of successful cases among the sarcomata.

To consider now in detail the various sites of growth and operations undertaken:

Lip.—Six operations were performed for epithelial cancer of the lip. Four of these were by an excision of a V-shaped piece of the lip. One was of the upper lip, and we were afraid at the time that a sufficient margin of healthy tissue was not removed. The disease recurred almost at once.

Of the three V excisions of the lower lip, one we failed to trace and two are well at the end of five and six years, respectively.

Two were extensive excisions of the lower lip; one of these died five weeks after leaving the hospital; we fear with recurrence. The other returned five months after operation with a recurrent growth precluding further operative procedure.

In cases of early cancer of the free edge of the lip, as was the case in three of the cases here recorded, we favour a wide V-shaped incision, and should not follow this by clearing out the lymphatic glands of both anterior triangles as has been recently recommended. Such a procedure converts a very simple into a serious operation, and as far as we can see at present without sufficient compensatory advantages. In all cases of more extensive disease a very free excision of the lip should be performed and the glands of both anterior triangles should certainly be removed.

Scalp.—Two cases of epithelial cancer. One case was an early cancer implanted on an old syphilitic ulcer of the scalp. The growth was excised and the patient remains well three years after operation.

The other case was one of crateriform ulcer of the scalp. It was freely excised and further packed with strong solution of chloride of zinc. The patient returned in two months with the bone completely destroyed by further growth; the probe passing directly into the brain.

Penis.—Eight cases of epithelial cancer. Four of these were complete (Pearce-Gould) operations, four were partial amputations. One of each class could not be traced. Of the three complete amputations all recurred after periods of six, eight and ten months. Two recurred in the scrotum, and one, without local recurrence, infected too extensively for operation the right inguinal glands.

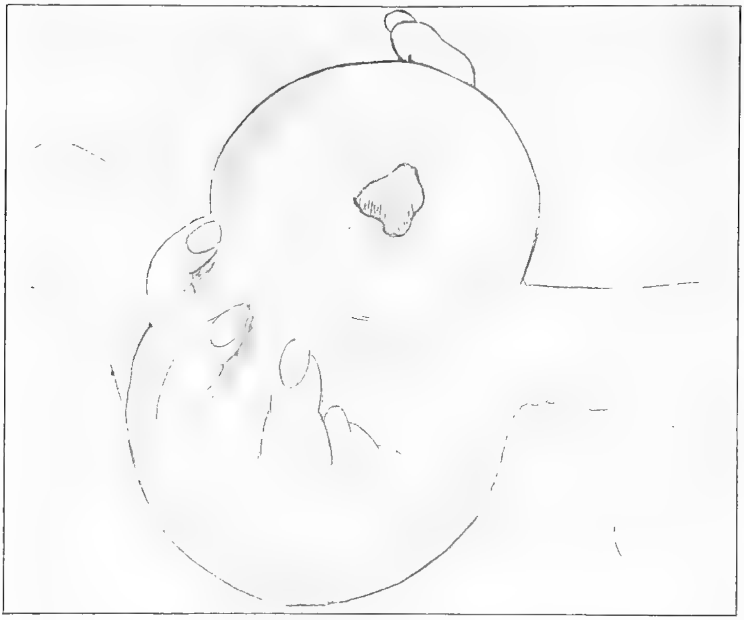

FIG. 254. —Sarcoma of the right hand. Male, age forty-three, works in cemetery. Duration, two years. Axillary glands enlarged. Tumor bleeds. Its circumference is 20 3/4 inches. No cachexia. Patient refused operation unless the hand was preserved, which was impossible. (*By J. E. Kuhne, Tungkin.*)

Of the three partial amputations, one died some months later, stated to have been without a recurrence; two remain well after periods of twenty months and two years.

Of course these figures give a wholly wrong idea of the value of the two operations; the partial operation being employed in early cases only, the complete in cases already very advanced. From the experience of these and other cases we are very favourably impressed with the partial amputation where a good margin of healthy tissue can be left on the part amputated, but we now always remove the first set of lymphatic glands (superficial inguinal) with the fatty tissue in which they are imbedded. The addition to the simple operation is very slight, as the glands are removed with great ease.

Scar.—Epithelial cancer of a scar; one case of a lad who had been run over by a native buffalo cart some years before, tearing of his hand just above the wrist. Amputation was performed below the elbow. No recurrence after five years.

Breast.—Five cases of glandular carcinoma and one of sarcoma. This latter case was in a woman six months pregnant; the axillary glands were also widely involved. A very extensive and complete operation was performed, but the disease recurred at once and the patient died undelivered a few weeks after leaving hospital.

Of the five cases of carcinoma one could not be traced, two recurred and died a few months after operation, two are alive and well two years and seven months and two years and one month after operation.

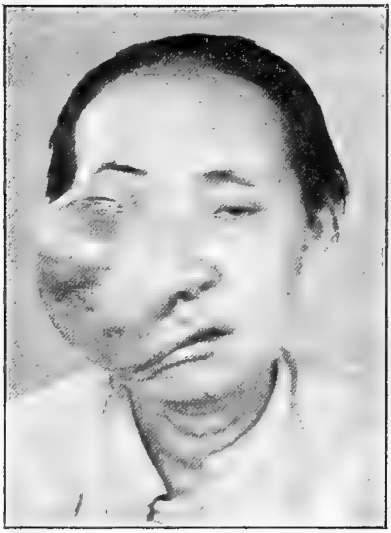

Fig. 255.—Osteosarcoma of the maxilla, with involvment of the parotid gland and pharynx. (*By Jefferys.*)

In all these cases a complete operation was performed, the breast, with the great pectoral muscle, being removed and the axilla cleared out after division of the lesser pectoral muscle. In regard to this operation we believe that our failure has usually been in not removing sufficient skin. In all cases there has been an ulcerated tumour with considerable involvement of the skin, and we think a freer removal of the superficial tissues might have given a better chance of success in the cases which recurred. We find that a long incision from the middle of the breast incision down the mid-axillary line loosens a flap of skin which materially assists in covering the denuded area. It is interesting to note that the prognosis is not necessarily the best in the comparatively early cases or necessarily worst in the late cases. Of the cases remaining well, one was a comparatively early case with moderate lymphatic infection; the axilla being easily cleared out. The other was a case only just within the limit of reasonable operation—a very extensive and foul skin ulcer and very large axillary glands. The glands were very adherent to the axillary vein, which was wounded three times in attempts to dissect it clean, and eventually had to be ligatured and divided. Our own rule is to operate on all cases where the original tumour or the mass of glands is not absolutely fixed.

Jaw.—One case of excision of the lower jaw on both sides for carcinoma. Recurred almost at once.

One case of excision of upper jaw for round-celled sarcoma recurred before patient left hospital. This was a very disappointing case, as at the operation it appeared as if all the growth had been cleared away.

One case of excision of upper jaw for endothelioma. This case was described at the 1905 meeting of the Association. The patient remained apparently free from disease for two and a half years. A recurrence then took place in the orbit and temporal fossa. A second operation was performed, but left a large area of brain exposed and the patient died shortly after, whether from the operation or from further spread of growth into the brain it was difficult to say.

Tongue. -Two cases of epithelial cancer. Excision by Whitehead's method after ligature of the lingual artery in neck. One case recurred at once and one died of plague a year after operation without any recurrence. Since these operations were recorded we have had other unsuccessful cases, but attribute this entirely to insufficient surgical measures. There are probably few operations where experience is so important as in operations on the tongue.

Sarcomata of Face, Neck, etc.—Seven cases, of which one could not be traced.

One mixed-celled sarcoma of the sternomastoid muscle.—Growth with whole muscle excised. Recurred.

Round-celled sarcoma of neck. -Removed after division of sternomastoid. Recurred.

Small spindle-celled sarcoma of eyelid.—Excised. Died a few months later, probably with recurrence.

Spindle-celled sarcoma below mastoid process. -Excised. Recurred a few months later and died after a second operation in a Japanese hospital.

Large spindle-celled sarcoma of sheath of pectoralis major.—This was a very small tumour, arising from the sheath at the free edge of the pectoralis major. It was excised very freely with a piece of the underlying muscle. Patient well three years later.

Round-celled sarcoma springing from the periosteum of the posterior surface of the tibia.—Amputation above knee. Died from "fever" one year after operation without recurrence.

We should like now to add a few words about **partial operations.**

It is generally agreed that operation for malignant disease should not be attempted unless it seems probable that the whole of the growth can be removed. While agreeing with this rule, we believe that there are some important exceptions.

In the case of foul ulcerated tumours of the breast we make it a rule where possible to perform a local removal even where a complete operation cannot be performed. The patient is thus relieved of a stinking mass which is a constant horror to herself and makes her an object of loathing to others. The operation, we believe, neither shortens nor prolongs life.

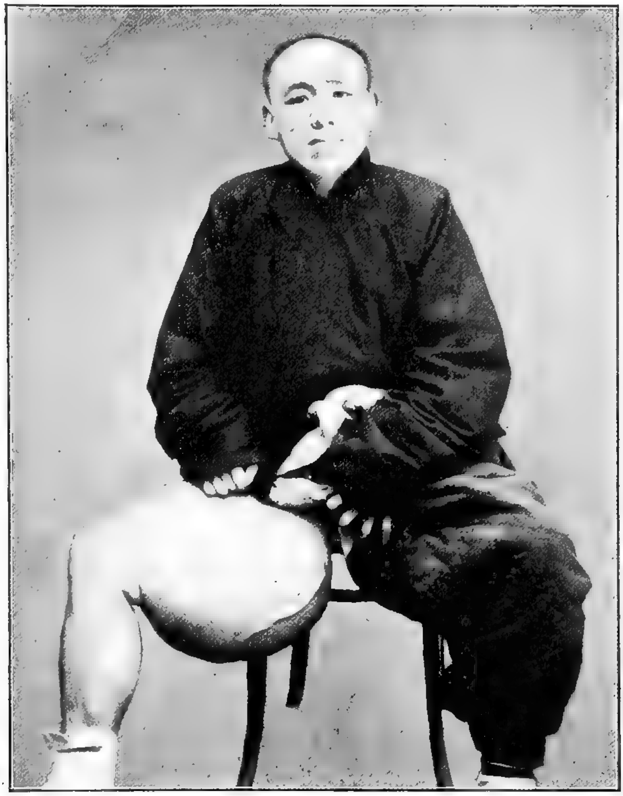

FIG. 256.—Fibrosarcoma of the thigh, nineteen pounds, two years' growth. (*By F. L. Brander, Niu-chwang.*)

Many cases of cancer of the cervix come to us for treatment. We have not yet seen one case where a radical operation was practicable. Great good may, however, be done to some of these cases by a partial operation. Take the case of a woman with a large fungating mass on the cervix, bleeding very freely. The patient is greatly reduced by the anæmia and by the stinking discharge which is present when there is no actual bleeding. Such a case may be enormously benefited by the following operation: Under an anæsthetic the cervix is seized by a strong pair of volsellum forceps as high up as possible at any point where the tissue is still sufficiently strong to give a good hold. The cervix is pulled down as far as possible, and with a pair of strong curved scissors a number of snips are made, cutting away all the diseased tissue that can be reached; the pieces removed are wedge-shaped, thin toward the edge and thickest toward the central canal of the cervix. As much of the cervix as can be reached safely is thus cut away. The assistant holds a wool sponge firmly against the bleeding wound, thus controlling the hæmorrhage, while the operator very carefully arranges a number of swabs of wool soaked in a solution of bicarbonate of soda all round the remnants of the cervix. A swab soaked in strong solution of chloride of zinc is now rapidly made to replace the one that controls the hæmorrhage and the vagina filled up as quickly as possible with more bicarbonate of soda swabs. The soda swabs are removed the next day; the chloride of zinc one left till it sloughs away, when a healthy looking granulating ulcer is left.

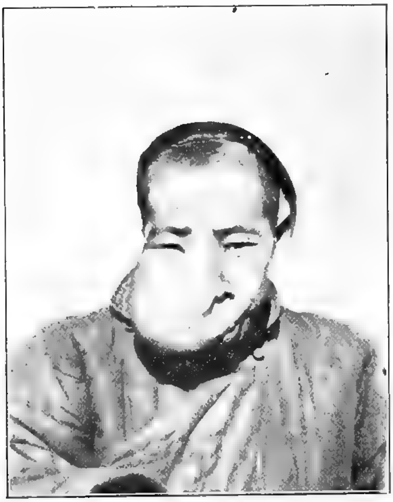

FIG. 257.—Osteosarcoma of the maxilla. (*Microscoped by Maxwell. Case and Photo by Edwards and Broomhall, Taiyuanfu.*)

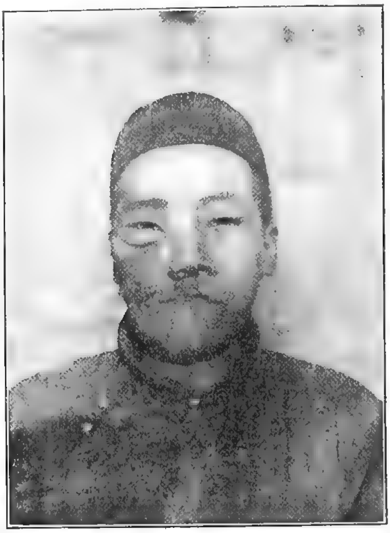

FIG. 258.—The same after removal.

We are satisfied that this treatment is of more value than simply to make life more comfortable. The last patient on whom we performed the operation was almost bedridden from anæmia and weakness from profuse hæmorrhages. A few weeks later she was able to walk about and sit with comfort through a hospital service. Of course the disease still runs its fatal course, but we believe more slowly as a result of this treatment and without any renewal of the profuse vaginal hæmorrhages. The operation itself, if rapidly performed, takes a very few minutes only and the risk of it is quite negligible.

One other palliative operation we have performed—once only. We propose to try it again next time we get a suitable case. It consists of ligature of the external carotid arteries for cases of irremovable growths in the neck. The artery is tied first on the diseased side and then a few days later on the opposite side. In the case on which we performed the operation we could not get at the bifurcation of the carotids on account of the size of the growth, so we tied the common carotid on that side and the external carotid on the other side. The result of the operation was that the terrible pain in the growth of which the patient complained stopped at once and the stony hardness was replaced by a soft œdema, followed by a profuse discharge of pus, greatly reducing the size of the mass. But for the fact that we had removed and microscoped a piece of the carcinomatous growth at the first operation we should have been inclined to doubt our diagnosis. The patient returned home shortly after, and we were unable to get any further history of the case.

CHAPTER XIX.

GENITO-URINARY DISEASES AND STONE.

Nephritis.—The differentiation of **nephritis among the Chinese** has not been extensively carried out. There are comparatively few reports giving the statistics of urinary findings and, such as they are, they are not sufficiently adaptable to the drawing of conclusions because lacking the confirmation of post-mortem evidence. The careful examination of the urine of 400 patients in St. Luke's Hospital, Shanghai, by Yui gave a remarkably low percentage of patients with albuminuria, and it is confirmatory, so far as it goes, of our impressions concerning the percentage and the infrequency of nephritis.

Unlike many of the subtle organic diseases, nephritis presents itself to the foreign practitioner not infrequently for treatment, and the opportunity of discovering the existence of the disease in a large number of our ward patients is ample. We may take it as all but established that the acute inflammatory forms of nephritis associated with youth, and especially those arising as sequelæ to the infectious fevers, are fully as frequently met with among Chinese as in any other races.

It is hardly necessary to enter into questions of treatment. It may be worthy of remark, however, that although difficult in general to control the diet of Chinese patients, it is easier to do so in nephritis than in other affections, especially those of the gastro-intestinal tract.

We would also note the following points:

In the use of modern diuretics of the theobromine group (as theocine) care must be taken as they certainly act as renal irritants, and especially so upon kidneys that are not in good condition.

Theocine is given in doses of gr. iii b. d. or t. d. and will often excite a tremendous diurrhetic action.

Partial starvation—best with dieting—helps these diuretics immensely. This is explained on the ground of its being a chloride-free diet, but is probably due largely to the let up on the kidneys.

A Report of the Microscopic Findings of 400 *Specimens of Urine in St. Luke's Hospital, Shanghai*, 1907.

	Non-organised sediments																		Organised sediments															
																			Epithelial cells			Tube casts												
	Uric acid crystals.	Am. urates	Sod. urates	Hippuric acid	Calcium oxalate	Calc. phosphate	Calc. carbonate	Calc. sulphate	Ammonio-magnesium phosphate	Basic magnesium phosphate	Amorphous phosphate	Leucin	Tyrosin	Cystin	Cholesterin.	Xanthin	Hematoidin	Indigo	Urethral cystic	Renal	Blood corpuscles	Epithelial	Hyaline	Granular	Spermatozoa	Fat	Fibrin and cylindroids	Fungi	Pus and mucous cells	Trachomonas	Tubercle bacilli	Gonococci	Negatives	Number of cases
Syphilis	2	2	8	1	24		1		11		1		1						21		2		2	1	3		3	1	24	2			4	68
Traumatism	5	2	12		21	4		1	12			1	1						23	1				2				1	12	1			14	79
Tuberculosis	4	1	5	1	2				5		2								2					1			1		5		1		2	19
Pleurisy	2		1																								2							4
Malignant tumors	2		1		1				2										2				1				1		2					6
Pneumonia			3																1	4			2	2			2		4					7
Beri-beri	1	1	1					1	2		1																		1					6
Hepatic disorders			1	1	1					1	2	2	1						1														1	6
Renal diseases			5		1				3											2		1	1	3			1		2					7
Non-specific fevers	2		22		5				6		1								5					1					3				2	25
Malaria			3																4										2					7
Abdominal operations	2	1	2		1				2		1								1		1								1				1	8
Crytic and urethral diseases		1			2				3										2		3								6	1		1		10
Ascites and œdema			5		3				2											1				2					1				1	7
Nervous diseases	2		3		3	1			2										1										3					5
Gangrene and necrosis	1	1	2		4				3										3								2	1	1				2	13
Minor ailments	11	1	6		22				10		3		1						18	1			1	1			2	2	9				14	81
Health	1	1	1		15				3	1	4	1							23	1					1		4	1	3				7	42
Total	35	11	81	3	105	5	1	2	66	2	15	4	4						107	10	6	1	7	13	4		18	6	79	4	1	1	48	400

Tuberculosis of the kidneys is by no means uncommon, but has not been in our experience primary, being associated rather with either general tuberculosis or late pulmonary disease. We are, however, fully persuaded that the **chronic nephritis associated with old age,** and which we had believed to be largely dependent upon the two factors of alcoholism and heavy nitrogenous feeding, are altogether insignificant as compared with the white races in their bearing upon Chinese nosology. Whereas in the routine examination of the urine of elderly patients in America we have grown accustomed almost to expect a low percentage of albumin and evidence of kidney insufficiency, we have grown to feel that chronic nephritis need hardly be often considered a serious factor militating against the safety of operative procedures in elderly Chinese. It is well known that the Chinese as a race are not addicted largely to the use of a high percentage of alcohol in drinks, and that meat enters proportionately very little into their daily diet. And the clinical evidence of years bears out the theory stated above.

Suffering, as they commonly do, from a variety of protracted suppurative diseases, and especially associated with chronic tuberculosis and the unfortunate results of native malpractice in the treatment of compound fractures and so forth, **amyloid kidney,** as a part of the general amyloid degeneration of tissues, may be frequently expected, and to it may be attributed a long list of hospital mortalities in those institutions which admit such cases; and has led us in our own practice to favour a proportionately large number of radical procedures, giving prospect of an early recovery even at the cost of immediate risk or greater loss of tissue than one would consider, perhaps, warrantable practice in better nourished and earlier treated races.

"Of the urines examined most were of renal diseases; one case of hæmaturia with nephritis, cystitis, and ascites was found to contain, possibly in a causal relationship, certain unidentified embryonic forms; these were perfectly circular, 43μ in average diameter, and were observed on many occasions emerging from a capsule slightly smaller than themselves; no cilia were seen. For a more detailed account see the *Journal of Tropical Medicine, June* 1, 1905."—*Cole, Ningpo.*

Before passing on, we would call attention to the imperative necessity of an early self-training in **the recognition of beri-beri,** and so avoiding the neophytes, danger of diagnosing wet beri-beri as advanced nephritis with dropsy. Clinically, the appearances are quite deceptive. The dropsy is of the pale, boggy variety; the patient is anæmic, heart complications are evident; dyspnœa, and so forth. The history should be taken carefully, the urine studied conscientiously, and the differentiation established.

Table of Differential Diagnosis of Nephritis, Beri-beri, and Trichinosis.

	Beri-beri	Nephritis	Trichinosis
Definition	Multiple neuritis	Nephritis	Myositis.
Endemicity	Place infection	None	Local food epidemic.
Microscope	Negative for urine and fæces.	Urine shows tube-casts, blood, pus, etc.	Adult parasites in intestines, embryos in muscles.
Asphyxia	Cardiac, neurotic and hydrostatic.	Cardiac and hydrostatic.	Hydrostatic and muscular.
Anæsthesia	Patchy	None	Hyperæsthesia.
Anæmia	Moderate	Marked	Absent.
Albuminuria	Absent	Present	Absent.
Œdema	Dependent parts in Wet-B., especially early pretibial, also flanks, sacrum, neck, and sternum.	Face and limbs marked, particularly eyelids and genitals.	Face and limbs, particularly eyelids and brow.
Muscles	Atrophic in limbs in dry-B., tender in calves on pressure, occasional early swelling.	General wasting	Swollen and tender. Marked pain in muscles.
Wasting	Marked	Not so apparent	Marked in severe cases.
Blood			Eosinophilia in proportion to severity, aver. 30%.
Heart	Marked bruits	Associated disease	Rarely invaded.
Intestines	Early duodenitis. (Wright.) Have never seen it.	Indigestion variable	Early purging and vomiting and occasional hæmorrhage.
Reactions	Of degenerations in muscles.	Occasional neuritis	Normal except for pain.
Knee-jerk	Absent	Present	Present.
Brain	Unaffected	Late coma	Headache and sometimes focal symptoms.
Tongue	Clean	Dirty	Swollen, painful and coated as in typhoid.
Fever	Absent	Variable	Persistent and typhoidal.
Paralysis	Present	Terminal at times	Absent or pseudo from unwillingness to move.

The matter of **floating kidneys** and enteroptosis in general deserves special attention in China, where over-feeding, under-exercise, and under-nutrition are all exaggerated. Where operation for nephroptosis is refused, support should be used, the best being by means of a double truss, supported posteriorly against the lumbo-sacral region and supported firmly anteriorly by two flat oval plates on ball-and-socket hinges, pressing against the abdomen low down and laterally, not over the kidneys as formerly attempted.

Perinephritic abscess is not uncommon. It bears the usual hall-marks, and, except in tubercular cases, readily responds to the usual operative procedures with thorough drainage. In the opening of large perinephritic abscesses, a considerable hæmorrhage may be looked for. It is venous and controllable by drainage and pressure. If arterial, the vessel may be looked for not in the neighbourhood of the kidney, but as a muscular branch, perhaps of considerable size and at a considerable depth from the skin surface. We call attention to this fact, having lost a patient by secondary hæmorrhage from such a vessel.

Tumours of the kidney have not appeared to be common, and we have been rather surprised, considering the fact that sarcoma is exceedingly common in the young and middle-aged in the West, to fail to find any record whatever of sarcoma of the kidney.

Bladder.—When we come to the bladder and lower and external genito-urinary organs, we approach a region which presents itself to the surgeon practising in China as the field of a peculiarly **large number of accidents.** Of course, in Shanghai the Chinese are subject, particularly so through inexperience, to all the accidents associated with machinery, shipping, railroading, tramways, and so forth, among which, as one would naturally expect, the avulsion of the scalp by catching the cue on various sorts of machinery is exceedingly common.[1] In the interior cities, however, and country districts the graver accidents of major trauma are comparatively uncommon, and such accidents as there are, aside from the stab wounds of predatory and military life, are, in the vast majority of cases, of the soft and external parts. Such were the following, in our practice:

a. A boy of eight or ten years old fell upon an iron spike, which entered the centre of the perineum, completely dividing the prostatic urethra, tore the anterior wall of the bladder, and all but emerged just above the pubis.

b. A girl of ten years was shoved backward, sitting upon a pointed wooden stick which entered the ischio-rectal space, tearing the lateral wall of the vagina and perforating the peritoneum, causing local peritonitis and slight intestinal prolapse.

Rupture of the Bladder.—This may be considered one of the commonest accidents of the character of those to which we refer. Its seriousness depends entirely on whether the rupture includes the peritoneum or not. If it does, immediate laparotomy with repair of the bladder-wall, deep pelvic drainage, and the upright posture are indicated. No half-way measures are admissible. As in suprapubic lithotomy, in these cases also a soft-rubber catheter should be left in place in order to keep the bladder empty and free from pressure. In extraperitoneal rupture, direct air communication and free drainage are indicated in order to prevent cellular infiltration and infection.

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[1] See Chapter XII.

We have already referred to the common accident of **deep urethral rupture**. We have seen this as a result usually of falling or sitting on a sharp edge. Also from a kick and from penetration. The gentlest efforts may be warranted in attempting to reach the bladder with a soft-rubber catheter, but should not be persisted in, and no metallic instrument whatever should be passed. Thorough illumination is absolutely essential. Perineal operation, evacuation of clots, passage of a soft-rubber catheter through the urethra into the wound, and then through the wound into the bladder is the ideal treatment if the proximal urethral position can be located, and in nine cases out of ten it can. Otherwise, a continued suprapubic incision may be necessary, with retrograde catheterisation from the bladder downward, which must reveal the upper urethral wound. The hæmorrhage in these cases is severe. On opening the perineum, occasionally there may be found great distention by hæmatoma and active hæmostatic measures required—hot adrenalin injections, pressure, clamping, and packing.

Prostatitis.—It was the opinion of Hodge, of Hankow, that the minor grades of chronic prostatitis were very prevalent in China, indicated by the large number of gleets met with as well as the prevalence of sexual neurasthenia in men. The gland in these cases is not greatly enlarged, often hardly larger than normal. In our own practice gleet is common, neurasthenia exceedingly so, but prostatitis not frequently seen. Our colleague Tucker has operated through the past winter for carcinoma of the gland, but the past history of the patient was not satisfactory as to previous disease. We have at present a patient of sixty-four years of age, with a typical chronic enlargement of the prostate, posterior lobes, giving a prerectal mass the size of a small orange and at times totally obstructing urination. It is of more than six years' duration, as we saw him six years ago at a time when the prostate was not more than half its present size and dilatation with depleting treatment was sufficient to tide him until the present. When the bladder is dilated, the urine contains pus and excess of phosphates, and the indications are immediate perineal prostatectomy. This is the first typical example of this disease that we have seen in nine years' practice in China.

Undoubtedly the operation of prostatectomy is overdone these past few years. There are several alternatives, as removal of the middle lobe only, dilatation of the internal sphincter of the bladder, nicking the internal sphincter in several places, etc.

It is worth noting in this connection that old men in China are exceedingly slow to submit to operation. Palliative treatment and delay appeal strongly to their sense of what is desirable. It is quite likely that the present patient will refuse operation on the ground that he got along without it before for six years and hopes to do so again. Undoubtedly from a surgical standpoint operation is indicated at this time, and yet overpersuasion would here either insure a refusal or entail extreme anger in case success and satisfaction were not attained.

Boone's Postural Treatment.—H. W. Boone (Shanghai) (*China Medical Journal*, *XVII*, p. 169) describes a simple plan by way of palliation in these cases. It consists of a rattan couch with a perforation, and under this a vessel. The patient lies on his abdomen, and urinates through the perforation. The mechanism is as follows: In cases of urinary obstruction from hypertrophy of the middle lobe of the prostate, and by far the larger proportion are such, the prone position affords relief from pressure, and the weight of the middle lobe falling forward, straightens out the urethra. It is practical and worth trying when operation is refused. The method is not applicable to obstruction from the posterior lobes.

Operation.—For hypertrophy of the middle lobe, the best modern practice is partial excision by the suprapubic or combined routes. Complete prostatectomy is now only practised in malignant disease and in the robust aged, and seldom in the latter. Martin's (Philadelphia) retractor or Young's (Baltimore) will greatly improve the suprapubic field of operation.

Passing on to the scrotal contents. **Varicocele** is strangely infrequent among the Chinese. They are a hard-working race, subject to hæmorrhoids, varicose veins, and other venous congestions, and we do not altogether understand the infrequency of varicocele. Perhaps it may be accounted for partly by the naturally small size of the generative organs, including the testicles, and partly by the prevalence of the custom of wearing supporting loin cloths and so relieving the dependence of the glands. We have never operated for varicocele in a Chinese patient, although our genito-urinary clinic is enormous. We have never even had the condition shown us by the patient as if he were conscious of its presence.

Hydrocele is often met with, unilateral and bilateral, small and large. We have a single specimen combining a hernial sac, hydrocele of the cord and hydrocele of the tunica vaginalis. **The largest hydrocele** we have ever seen extended in the scrotum to a point below the condyles of the femur, and drew it over the penis in a way similar to that of elephantiasis. The hydrocele was double, the left side being much the larger and extending a considerable distance through the internal abdominal ring, but not communicating with the peritoneal cavity. It was not reducible. There was no hernia present. The operation, which was a success, consisted of excising a large part of the scrotal wall and packing the cavity even into the intraabdominal parts. After granulation sprang up the part was drained and finally closed. Any other procedure would have been hopelessly inadequate. The reaction was very considerable and the patient's life in danger for a couple of days, but the ultimate result was satisfactory.

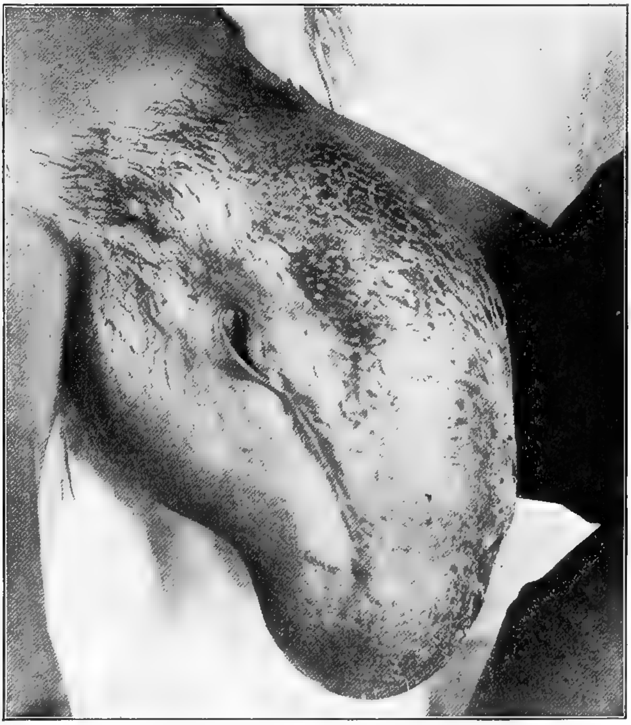


FIG. 259.—Large hydrocele. (*By Jefferys.*)

The **differential diagnosis** between hernia and hydrocele is usually easy enough for the surgeon. The conditions, however, are not differentiated by the Chinese and pass under the same name, Siau saung ch'i. It is quite a common event for Chinese, after they have seen a certain surgical procedure, to attempt to copy it; for example, after seeing a hydrocele punctured, to try it themselves. We published once the pictures of a hydrocele and a right oblique inguinal hernia which were being treated at the same time in St. Luke's surgical clinic. The hydrocele was being punctured, and after viewing the successful procedure, the hernia patient beamed with joy as he insisted on being treated likewise. And we have no doubt he tried it at a later epoch on his own responsibility, as we refused to hear his pleading accents and he would not have a radical operation. A similar instance was told us by the Harbour Master of Shanghai, one of whose lighthouse keepers, having seen a bubo opened in a foreign hospital, opened his own bubonocele with a pair of lighthouse lampwick shears, producing immediate general peritonitis and speedy death. Such facts emphasise the necessity and wisdom of careful explanation to our Chinese patients concerning their conditions, in order to minimise mistaken impressions on their part.

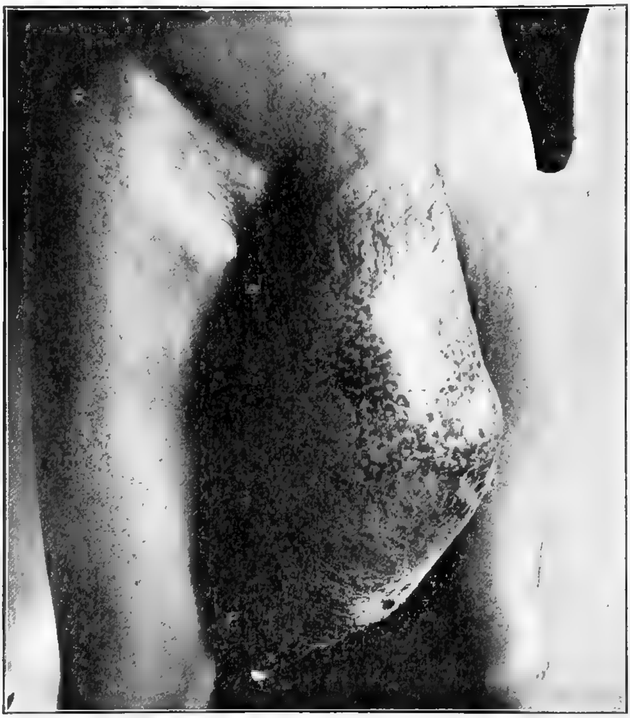


FIG. 260.—Large hydrocele. (*By Jeffreys.*)

We have never had any ill effects from the iodine injection treatment of hydrocele, and have had considerable success therewith in small hydroceles. But for the larger tumours opening and temporary packing (for a day or so) gives better results and is safer.

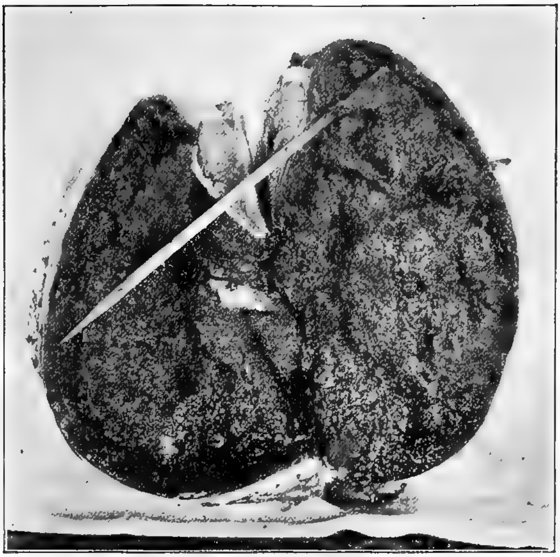


FIG. 261.—Old organized hæmorrhage in the tunica vaginalis, probably originally a hydrocele. The divided testicle is seen above. (*By Jefferys.*)

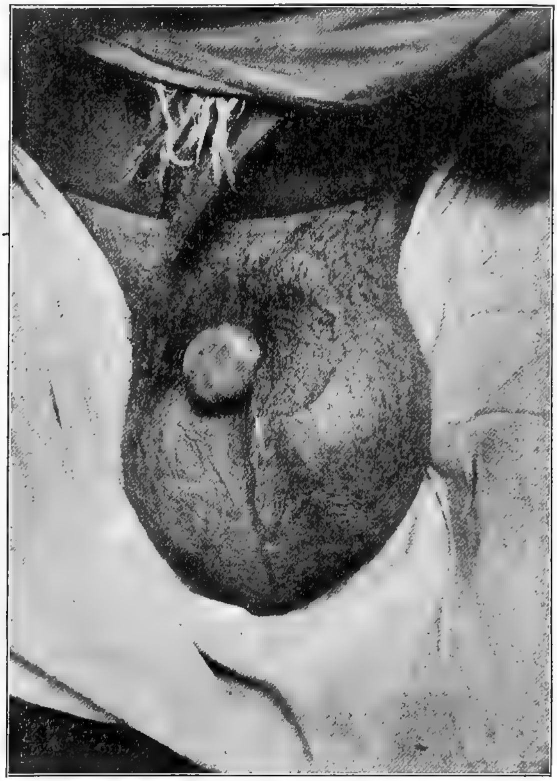


FIG. 262.—Hydrocele, thirty-two ounces of fluid. (*By Jefferys.*)

Tumours of the testicle have been treated in the chapter on Tumours. Hernia of the testicle will be spoken of under Sequelæ of Gonorrhœa.

Ulcerating granuloma of the pudenda,

> "The 'serpiginous ulceration of the genitals,' referred to by Macleod, and recently by other writers in India, more especially by Maitland, is the same, or a similar disease, examples of which I can recollect having seen in South China." – *Manson, p.* 583.

Before leaving this subject of the special genito-urinary surgery of China, thus imperfectly covered, it would be well to mention that one meets frequently the results of native practice, sometimes with a view of repairing injury done, occasionally merely as a matter of professional interest. The operation for stone in the bladder is sometimes performed by daring native surgeons of the old school, the perineal route being that employed; contrary to the (early English) prescientific practice which employed the suprapubic route. Needling is employed in hydrocele, abscess, and various other affections, occasionally doing no harm even

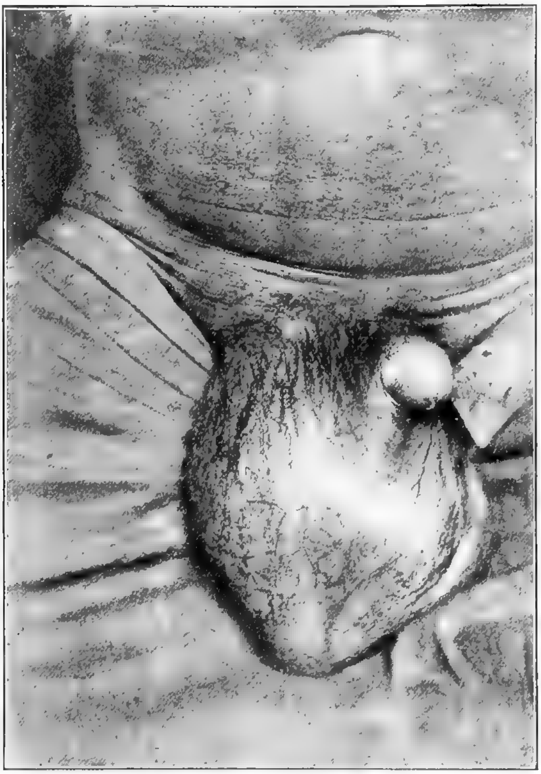
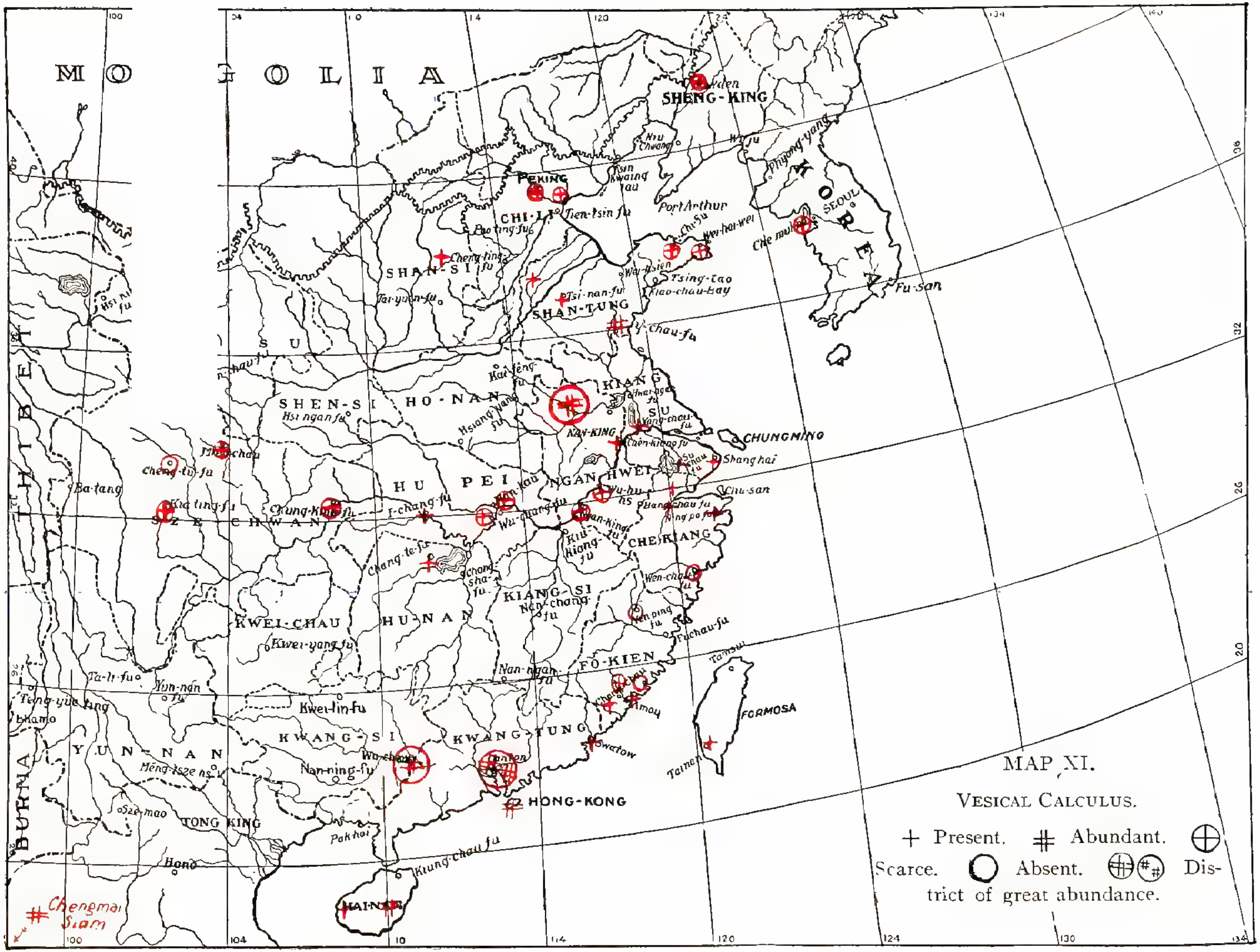


FIG. 263. -Right oblique inguinal hernia. (*By Jefferys.*)



MAP XI.

Vesical Calculus.

+ Present. # Abundant. ⊕ Scarce. ○ Absent. ⊕ # District of great abundance.

when introduced into hernial sacs; at other times producing widespread infection and peritonitis.

Calculus.

Since the days of Kerr, of Canton, it has been well known to medical men that stone in the bladder is very prevalent in the **province of Kwangtung.** It is perhaps the most prolific centre for this disease of which we have any knowledge. Kerr's records show a larger number of operations than any other known surgeon, barring one.

"Dr. J. G. Kerr's record for stone operations at Canton was 1300, only exceeded by Sir William Thompson."

"A few cases of vesical calculus have come for treatment, and these have been removed by the suprapubic method. Vesical calculus is not so common in Kwangsi as in the Canton delta."—*Macdonald, Wuchow.*

Within the last ten years Samuel Cochran has discovered and exploited a similarly profitable field **in North Anhuei,** his centre of work being Hwaiyuen. He has not yet written up the subject, but has for a number of years given the major portion of his time to operation for this condition, having the limited number of beds in his hospital bespoken weeks ahead by a long waiting list.

It is probable that there are other such centres, though these are certainly the two largest yet discovered. Ningpo is responsible for most of the stones we get in Shanghai, though occasionally our stone patients are from Canton or Anhuei. We have but one record of stone in a native-born Shanghai man.

"By way of summary, the saccharine and bean-curd diet with lack of animal food, the impurity of the water, persistently taken hot, along with the low malarious locality and the degree of concentration of urine during a good period of the year, the farmer and laborer (constituting the great majority of the cases) working under the hot sun of this southernmost province, must be main elements in the solution of this problem.

"* * * In no instance hitherto have I here met with a patient who exhibited symptoms of gravel during the winter months. The stone cases admitted to the hospital mostly come from the farming classes, who are compelled by the nature of their occupation to undergo severe physical exertion while exposed to great heat.

" * * * But as Dr. Wong observes, 'the gouty diathesis appears to have little to do with the prevalence of calculus, as gout is scarcely ever met with among the native population, and a large proportion of the stone cases are farmers.'—*J. C. Thompson, Macao.*

"'Though large stones weighing from 20 to 33 oz. are now very rare in Egypt, those still seen occur entirely among males, and their geographical distribution corresponds with that of bilharzia disease.'"—*Vesical Calculus, Allbutt Rolleston.* Vol II, Part II, p. 878.

With the conditions so favourable to the development of stone in the bladder, whatever those conditions may be, one would naturally expect to find the whole series of genito-urinary stones represented more abundantly than elsewhere, and such is the finding. Kidney stone, urethral stone, and preputial stone are by no means infrequent in China, however rare in other localities.

J. C. Thomson (Macao) mentions "the petrifactive tendency of the Chinese as seen in renal, vesical, scrotal, urethral, preputial, salivary, ocular, and temporal calcareous deposits, and especially in Kwangtung."

Casper in his "Genito-Urinary Diseases" (Bonney's translation), pp. 252–3, gives the following simple scheme for the chemical examination of stone:

"Fragments of the calculus are heated in a platinum spoon over a Bunsen burner."

Combustible.	Without flame and smoke.	Urates.	Uric acid, Urate of sodium, potassium, and ammonium.
	With flame and smoke.	Yellow flame, uriniferous odor.	Incrusted albuminoid body.
		Pale blue flame (sulphur). Odor of asafœtida.	Cystin.
Non-combustible.	Pulverised stone foams with HCl.	Carbonate of lime.	
	Pulverised stone does not foam with HCl.	The red-hot powdered stone foams with HCl.	Oxalate of lime.
		The red-hot powdered stone does not foam with HCl.	Earthy phosphates (lime, magnesia).

One should not forget the possible parasitic origin of these calculi.

"In December, 1844, the first modern lithotomy was performed upon a Chinese—a case of ten years' standing in a young man of Canton province, the stone of 9 drachms' weight and 3 1/2 x 5 1/2 inches in circumference, in which the operation and treatment were in the highest degree successful, with complete cure in eighteen days; the operator, the pioneer medical missionary, Dr. Peter Parker.

"In Kerr's grand series we find:

"In number, Case 812 counts thirty-one Calculi, Case 267, twenty-two, etc.

"In composition the most are of uric acid. A number were encysted, as in Case 812, where the sac contained no less than thirty calculi. Case 118 was that of a blind man. One with open urachus. Calculi are also found in the urethra frequently, in the prepuce numerously, often, in one case to the number of 124, in the neck of the bladder, the kidneys, and in the scrotum, a great rarity on his mundane sphere.

"No age is exempt. From two years up to eighty, of which latter we have several, and above seventy, some thirteen, while over sixty a larger proportion—all have undergone operation.

"In weight we have from 7 1/2 ounces or 8 ounces in the two calculi of Case 692, and several of 6 ounces, with recovery in all, to the least of all. No. 9 gives a circumference of 10 inches.

"In February, 1889, I removed by the lateral perineal operation a stone larger than a turkey's egg, weighing nearly 3 ounces when dry, and considerable was lost in washing out the bladder."—*Coltman, Tsinan.*

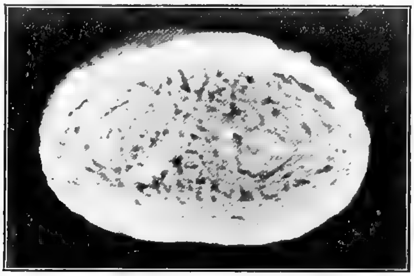


FIG. 264.—Vesical calculus. Uric acid and mixed. (To size.) (*By Jefferys.*)

In the course of years the collection of bladder stones in our museum has grown to some size and we find among them the largest proportion to be uric acid stones, and uric acid may frequently form the centre, the reaction changing the deposit along with the development of an increasingly aggravated cystitis. Mulberry calculus (oxalates) in its most typical form is found with some frequency. The common variation in size is from 3/4 to 3 inches in length, the prevailing shape being flattened egg-shape, but with symmetrical ends. Stones are usually single, but in the larger sizes apt to bud, that is, to project into pockets in the bladder-wall which may anchor them quite firmly thereto. The larger sizes will occasionally completely fill the contracted, thick-walled, cicatrised bladder when it is empty and fit it almost as a mould. Extremely interesting formations occur at times, such as jointed stones, ball and socket, and so forth. One particularly large specimen of the latter variety included an upper ovoid part within the bladder and a lower, longer and thinner, portion within the urethra; the final outcome of which was a urinary fistula, infiltration of the scrotum, sloughing and local gangrene, and the removal of the double stone through the perineum.

The man presented himself with great œdema of the scrotum. If we remember rightly, a soft catheter was easily passed and clear urine withdrawn. At any rate, there was no obstruction to urination. Multiple puncture was performed, but a large moist gangrenous spot developed in the dependent portion of the scrotum. This was laid open and drained freely. The size of the scrotum gradually became less, as did the tension. During our absence in Japan the urethra became occluded, and Dr. Duncan Reid, on examination, discovered a stone at the neck of the bladder. Perineal section was performed and two large phosphatic stones removed, that (Fig. 267.) (A) lay at the neck of the bladder and that (B) in the prostatic urethra. (Weight, each 2 ounces.) A smooth facet marked

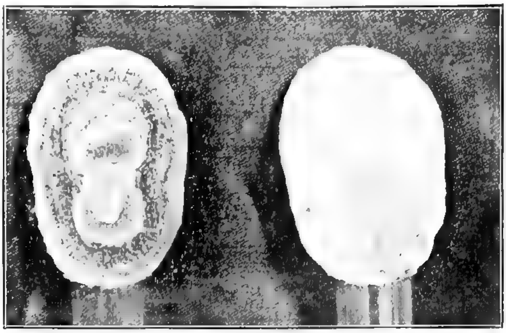


FIG. 265.—Vesical calculus. Uric acid and phosphates. Double nucleus. (To size.) *By Jefferys.)*

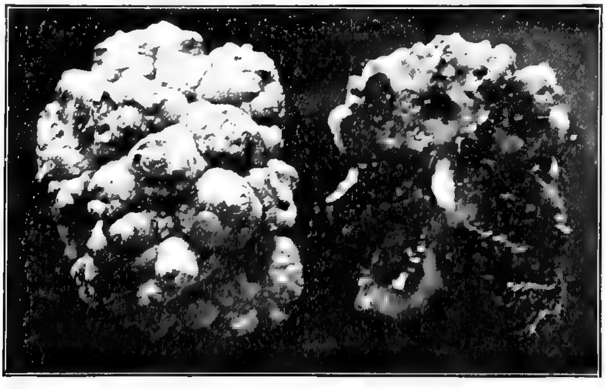


FIG. 266. Vesical calculus. Oxalates. (To size.) (*By Jefferys.*)

the surface of apposition and indicated a sort of movable joint. The urine must have slipped around the stones up to this time and so failed to reveal their presence, and at the time of establishing free drainage the scrotum and perineum were so enormously enlarged as to mask even the presence of so large a urethral stone. The patient made a slow but satisfactory recovery, and was discharged with a small perineal fistula which promised to close of its own accord.

> "One of the stone patients was a young man of twenty-two years of age, in a very miserable bodily condition; the stone, which had the form of an hour-glass, weighed more than 5 ounces. On the seventh day after operation he was taken home."—*Olpp, Tungkun.*

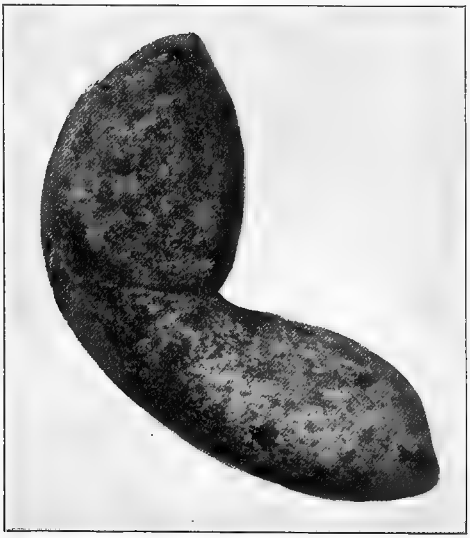


FIG. 267.—Vesical and urethral calculus. Phosphatic jointed double stone. The upper was in the bladder, the lower in the deep urethra. Two-thirds size. (*By Jefferys.*)

Another, of the budding variety, gave the history on admission of having previously been operated upon for stone. The stone had evidently reformed. By the perineal route we removed a large phosphatic calculus, which we remembered giving a peculiar sensation as of breaking away from the bladder-wall; but as the bladder appeared smooth and empty, we inferred we had been mistaken. The surface of the stone was rather rough and we did not find evidence of fracture. The patient recovered, but two years later presented himself a third time for stone. We remembered the former operation and the incident spoken of. Re-operating by the perineal route and again experiencing the breaking sensation; this time, after the most diligent search, we found a rough surface in a pocket behind the prostate. After most tedious and prolonged manipulation with the forefinger we enucleated from the bladder-wall a perfectly round bud with a small fracture surface, which had evidently, as we believe, been the nucleus on which three large bladder stones had formed and been removed at successive operations. It would be interesting to know whether the first operator experienced the fracture sensation. The patient has not returned after many years, and we infer there was no re-development.

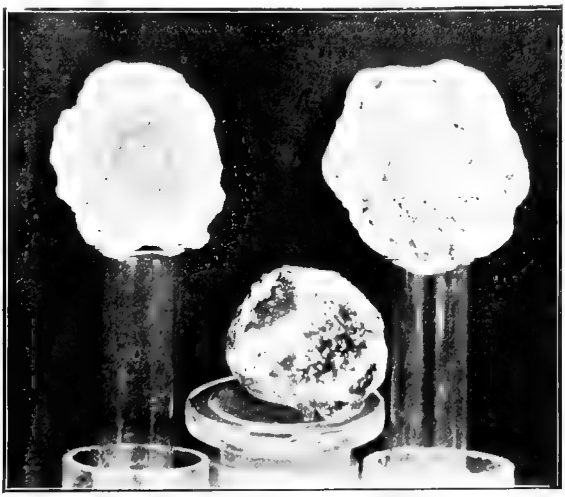


FIG. 268.—Vesical calculus. Phosphatic double stone, the upper a bud from the lower which was imbedded in the bladder wall behind the prostate. The upper stone is split in halves. *(By Jefferys.)*

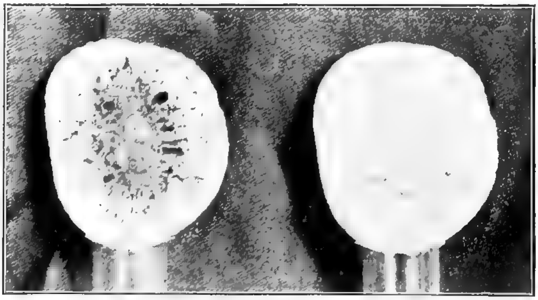


FIG. 269. Vesical calculus. Oxalate centre, mixed outside. (To size.) *(By Jefferys.)*

Mulberry calculi have all been large, in our experience; too large to be safely removed by the perineal route without partial crushing through the wound which, however, is easy of accomplishment and may be required even in the suprapubic operation.

Symptoms.—One may look for the classical symptoms of stone almost without exception, though the degree of severity is extremely variable and bears only a partial relationship to the size of the stone. Pain in the glans penis is almost pathognomonic when attended by no local evidences of inflammation. We have found this symptom, however, in carcinoma of the prostate and tuberculosis of the bladder. Sudden stoppage of the flow is frequent, but not by any means invariable. There is usually great discomfort on walking, and incontinence is frequent. Cystitis in varying degree is the rule. One may occasionally feel the stone per rectum, if the bladder-wall be not too greatly thickened and scarred. In children, both **boys and girls,** one may always feel the stone readily by bi-manual palpation. Anæsthesia is here required. In such, however, where several coils of intestine may fall within the grasp, one must exclude hardened masses of fæces in the sigmoid which may simulate stone somewhat. In one instance we made a positive diagnosis of stone in a boy four years old by feeling such a mass of fæcal matter, the symptoms being incontinence of urine and vesical irritation. Operation was advised, consent obtained, the patient anæsthetised, stone searcher passed, and no stone found. Re-examination per rectum revealed nothing whatever. Incidentally, we lost the patient, not by operation, which was not performed, but by transference to the care of another physician. The case responded to simple treatment of some sort.

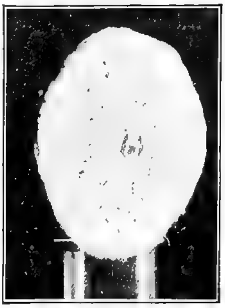


FIG. 270.—Vesical calculus. Uric acid and showing organic nucleus. (To size.) (*By Jefferys.*)

Vesical calculus in women is found, in small proportion as compared with men, and even in very young girls. Quite recently, from a girl six years of age, with symptoms dating for a year back, of marked cystitis, incontinence, constant intolerable pain with occasional ejaculations of spoonfuls of creamy, curdy pus, we extracted by suprapubic operation a phosphatic stone 2 inches in length, lying in a dilated pocket of the upper bladder-wall, the pocket extending almost to the umbilicus. The child was small for her age and the urethra admitted with difficulty our smallest lithotrite. It was impossible to grasp the stone because of its encysted position, and the attempt was abandoned. Suprapubic operation proved, however, extremely easy, and the peritoneal reflexion over the bladder, lifted so high as not to appear at all in the operative field, which cannnot be said of many operations in adults.

A nice point to remember in operation upon children is that it is neither necessary to inflate the rectum nor distend the bladder, as a competent assistant by inserting a forefinger in the rectum can raise the stone and place it against the abdominal wall in such manner as to serve as a perfect guide to its whereabouts, and so render the location of the bladder extremely easy. **The same may be done in women** (though suprapubic operation in women is not usually demanded, the urethral route being, in the majority of cases, available), two fingers in the vagina serving the purpose of raising the stone against the abdominal wall. Even in men, though occasionally helpful, the distention of the rectum is seldom necessary, and even the distention of the bladder not universally so. The guide in these cases should be a large metal sound with the handle depressed between the thighs and the point brought out against the abdominal wall an inch or so above the pubic bone, in the centre line of course.

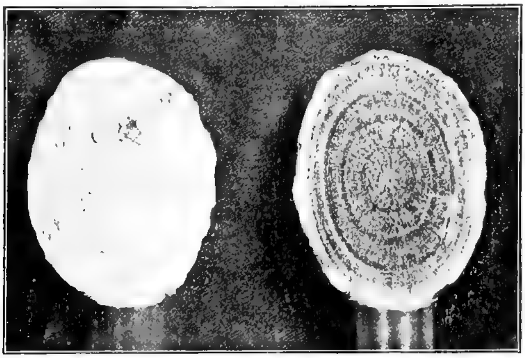


FIG. 271.—Vesical calculus. Pure uric acid, from a girl six years old. (To size.) (*By Jefferys.*)

"Little Wu Tsung-hsien suffered for years with calculus. He was wasted to a shadow. At the operation it was found that his trouble was complicated by an appendicitis that had formed a large abscess. He gradually gained strength and recovered sufficiently to go home. A few months later he returned, the calculus having recurred and his poor mother was in despair, fearing his case was hopeless."—*Cochran, Hwaiyuen*, 1907.

Rules for the Choice of Operation.—Our rules for the choice of operation may be stated somewhat as follows:

In young girls, the suprapubic route in all cases, unless the stone be soft and as small as a hazel-nut.

In women, the urethral route for the smaller and softer stones, preliminary gentle dilatation having been effected. In the larger and harder stones, the suprapubic route invariably. It is needless to say that in neither women nor girls is any approach by the vaginal bladder-wall allowable under any circumstances whatever.

In boys, the suprapubic is the only route, the urethra being too tender and too tortuous to admit of the crushing operation and the evacuation too difficult and too uncertain, while the perineal operation takes an unwarrantable risk of future sterility. A possible exception might be made if the infection and cystitis were so extensive and virulent as to require perineal drainage, such demand, however, being extremely rare.

In the larger field of operation upon men the urethral route and the crushing operation are applicable to cases of small, soft stone, an extreme limit of 1 inch in size being allowed and the condition of the bladder being fairly healthy. Small bladder tumours and very small (minute) stones can be extracted easily and satisfactorily by means of the cystoscope and forceps combined, as designed by Young, of Johns Hopkins. It may almost be called a non-operative procedure. In old men past the age of procreation, where cystitis is present and especially where one or more complicating herniæ are found, for small stone, the median perineal route, for larger stone, up to, say, 2 inches, the lateral perineal route, is advisable.

In all other cases, without exception, and they are the vast majority of all cases of stone in China, the suprapubic route is the operation of election. This includes especially the larger stones of all ages and the average and larger stones of men within or before the age of procreation.

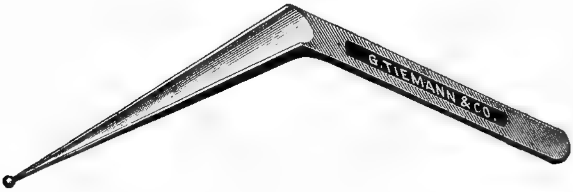


FIG. 272.—Teale's probe-gorget.

The Operation.—Taking up the operative procedures for stone, so thoroughly have these been treated in other works and so soundly, we merely wish to indicate here some points of special application, of special danger, and of peculiar interest.

In the first place, the crushing operation, ingenious and excellent as it is, has largely given place in practice to the suprapubic, it being now realised that of the two the former is more dangerous, the more tedious, and the less satisfactory—the last point owing to the ever-present uncertainty of thorough evacuation.

In China the crushing operation is not wisely applicable in more than one case of stone in every twenty-five except as an auxiliary to the suprapubic and the perineal, when it is used to break up through the incision the larger stones into fragments of such size that they may easily be withdrawn through the wound without laceration of the parts. We would emphasise that the good surgeon will not allow his desire to obtain a perfect and interesting specimen to overrule his duty of assuring the safety and comfort of his patient. To drag even a small mulberry calculus or a large phosphatic one through either a suprapubic wound or a perineal wound is never warranted, when, by breaking the calculus in halves or quarters the fragments can be so gently and easily withdrawn.

We plead guilty to having attempted such a procedure (to pull a large mulberry calculus through a perineal wound) with the result of greatly lacerating the whole prostatic region and finally abandoning the attempt, crushing the stone into three parts and easily removing each one.

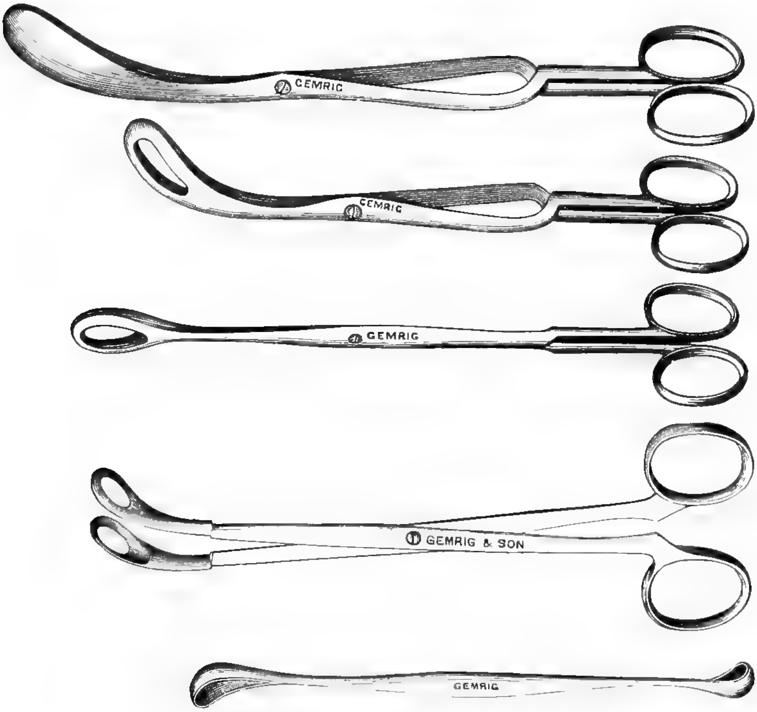


FIG. 273.—Stone forceps and scoop.

We would emphasise in this connection the importance even in the smaller stones of making sure that we are removing them **in their long axis,** and of working them from side to side rather than by a direct pull.

The perineal operation has the advantages over all others of **speed and good drainage.** It should be completed, from the first puncture to the end, within five minutes, if not less. In feeble patients, in the aged, and in those with any tendency to nephritis the advantage of speed is evident. In cystitis, and especially in those cases where there is a marked tendency to the deposit of gravel and phosphates, the free drainage of the bladder is an immense gain. A practical point also is the fact that a Chinese patient will often consent to the perineal route when persuasion will fail to gain consent to the suprapubic, which is inevitably regarded as an abdominal operation. The one great danger or accident of this operation is **hæmorrhage,** and it is not to be too lightly considered. This may be from two main sources, even though performed accurately and without error, and from one source, through error.

The former are, hæmorrhage from the bladder-wall and from the transverse branch of the internal pudic. The last-named is easily reached and clamped and should be ligated with a buried stitch. The artery of the bulb is divided, owing to faulty technic. The bulb cannot be clamped except in a shallow perineum, and dependence must be placed upon packing a gauze tent around the silver drainage-tube. The double layer of gauze is punctured by the drainage-tube, tied firmly on the inside, and the drainage-tube inserted into the bladder. With a blunt instrument long strips of gauze are packed tightly around the whole circumference of the tube, completely filling the wound. A couple of ounces of weak solution of adrenalin or some other local styptic are injected into the bladder and into the gauze, and the whole bound firmly and tied in place. This should not be removed until the second or third day, and then most gently. If the hæmorrhage recurs, the whole must be replaced and left in still longer. Meanwhile the patient must be kept quiet, and adrenalin, ergot, and so forth may be administered in rational doses.

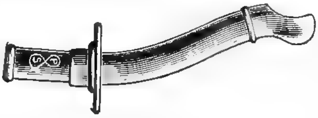


FIG. 274.—Perineal drainage-tube.

When hæmorrhage takes place from the bladder-wall it is usually in the form of constant oozing and appears thoroughly mixed with urine. Thorough disinfection and irrigation and final injection of a local styptic solution will usually control it, and, besides adrenalin and ergot, considerable reliance may be placed upon the older remedy, tincture of hamamelis, by mouth and locally. Quiet, low diet, and the forbidding of all exertion must be insisted upon. We twice very nearly lost patients from persistent hæmorrhage from the bladder-wall, which in one case kept up for fully a month's time. In another patient, where profuse hæmorrhage from the artery of the bulb took place, it was only controlled by the process of packing above described. At the first dressing the hæmorrhage recurred, and the packing was repeated; at the second dressing, it having completely stopped, the patient was put to bed without packing of the wound and exhorted to quiet and so forth. During a visit of his children and some friends, a mad caprice induced him to get out of bed and exhibit his athletic prowess by lifting and tossing a child in the air. The effort was followed immediately by an enormous hæmorrhage which brought on syncope and an all but fatal issue, the patient dying finally in the course of three or four days from heart failure.

> "Twenty-five men and children have been operated on for stone in the bladder, nine suprapubically, a girl by dilating the urethra, and the remainder by the median operation. The only one who did not recover was an ill-tempered old man, who on the fourth day after the operation, refusing to listen to the warnings of his attendant, took off his dressing, went down the steep staircase of our matshed, and had a walk. When I scolded him at my next visit, he gave as his excuse that he felt quite well and able to walk. His temperature, which was normal, began to rise, a persistent hiccough set in and prevented him from taking food, and eleven days after the operation he was removed from the hospital to his own home by his sons."—*J. E. Kühne, Tungkun.*

In the perineal **operation upon old men** it is often found that the cause of the stone is, at least partially, poor drainage, brought on by some enlargement of the prostate, and a little extra time may wisely be devoted to partial if not complete enucleation of the gland at the time and through the wound. In some cases the condition of the gland will not allow of any such easy procedure, but often a merely sclerotic gland may be scooped out in its two divisions by the forefinger or a spoon-shaped forceps blade, thus giving admirable drainage and a greater sense of safety from recurrence, as well as increased comfort to the patient. In one instance, in passing the forefinger into the bladder we pushed the larger half of the prostate before it and, after the removal of the stone, reinserting the forefinger, removed the offending portion of the gland with the greatest ease.

The **suprapubic operation** is the modern operation for the removal of stone from the bladder, and deserves the careful study and the best respects of the genito-urinary surgeon. Again we but wish to comment thereon and add a few suggestions to the already elaborate treatises.

The fear of wounding and so **opening the peritoneum** is somewhat exaggerated in most descriptive accounts, there being even in young children small danger of the accident. But the accident must not be allowed to take place, as the stone-containing bladder is often as far as possible from being an aseptic organ. If torn before the bladder is opened, the operation should not be continued at that time. The surgeon should either postpone the operation until closure has taken place or the wound should be closed and the perineal route at once resorted to. If the peritoneum should be opened after the bladder has been incised, the accident is serious and must be treated as in the case of incised wound of bladder with peritoneal communication. (See Rupture of Bladder.)

We have spoken already of the sound as a guide in the adult male and the pressure of the stone against the abdominal wall as a guide in women and children. Seven or eight ounces of salt solution may be introduced in the bladder, the same being retained by tying a drainage-tube around the penis. We strongly deprecate the use of a large rectal bag as unnecessary and difficult of introduction; and as for the distention of the bladder, as it prevents the use of a sound as a guide, it is a doubtful advantage. The skin incision should be directly in the middle line and extend slightly over the pubic bone. Occasionally the pyramidalis will either be divided

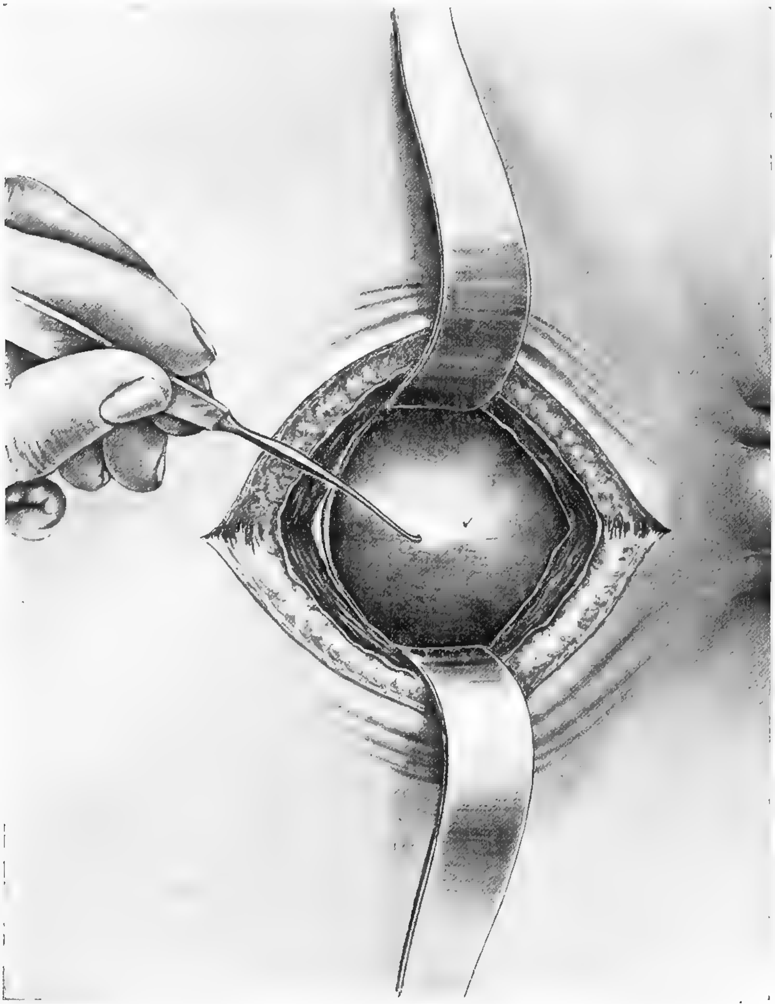


Fig. 275.—Bladder exposed and steadied with a tenaculum preparatory to being opened. *(From Deaver, Enlargement of the Prostate.)*

to one side of the middle line or apparently overlap the middle line as a muscular structure, in which case it must not be mistaken for the bladder-wall which lies considerably deeper and is not approached without first encountering some venous hæmorrhage from the prevesicular fat. Kocher's transverse incision gives an even better field, but involves partial separation of the recti-tendons from the pubic bones. It must be remembered that the bladder-wall dips deeply under the pubis and that the first quick puncture thereof may safely be made at such an angle that the point of the knife actually enters the bladder under the pubis. When entered, the long-bladed knife may be drawn upward for half an inch or so and a hæmostat (pressure forceps) inserted into the bladder as a guide, or the point of the sound in the bladder extruded through the wound, after which retention sutures or better, retention forceps, may be placed in the bladder-wall and the wound enlarged upward as much as is necessary. Larger stones should then with the finger be separated where adherent to the bladder-wall (care being taken not to shove the bladder before the finger with too much violence), then partially crushed and every scrap of stone and gravel removed. A thorough irrigation of salt solution, the insertion of a soft-rubber catheter by the urethra, two or three Lembert chromicised gut sutures in the bladder-wall, the insertion of a long soft-rubber tube or a cigarette drain through the suprapubic wound into the bladder, and the partial closure of the muscle and skin wound around it (silkworm gut).

Cochran's practice, and he is our most experienced man, is, we believe, invariably to drain as above, at least for a day or two, occasionally even packing gauze around the tube. There is no question but that this is the safer method of treatment. There is practically no danger if it be followed, whereas the complete closure of a suprapubic cystotomy wound, though often successful, occasionally proves extremely treacherous and dangerous. We have tried both ways and have obtained perfect union by first intention and without leakage. But we have also had occasion to repent deeply the attempt. In one instance the patient, making the effort of urination, forced urine through the bladder wound and produced the most violent pelvic inflammation we have ever seen, requiring free opening and three cigarette drains into the depths of the pelvic basin, the patient only escaping death through the possession of an extraordinarily robust constitution. Since this event we have adopted the invariable rule of draining the suprapubic wound, often, however, closing the bladder and merely inserting a thin gauze strip into the prevesical space, withdrawing the same after a couple of days and tying an already-placed stitch.

"The stone cases are always 'anxious ones'; in eleven of them the suprapubic, in eight the median lithotomy was performed. One of them had to be operated twice; half a year after the first operation, a small newly-formed stone was found and removed. Two died in the hospital, one was removed in a critical state. Another one, from whom one large stone, weighing more than 3 ounces, had been removed suprapubically, caused us some trouble. On the seventeenth day after the operation, he swallowed at one meal nine bowls of rice, an unheard-of amount. The distention of the abdomen was so great that the wound gave way, causing a slight peritonitis. On the thirty-first day he left us well but for a small fistula."—*Olpp, Tungkun.*

The rule might be stated as follows:

In dirty cases, and especially when the patient is under average intelligence, drain into the bladder. In others, if the bladder wall may be nicely closed, drain into the pre-vesical space. Keep a soft catheter in the bladder for four or five days, or longer if necessary, and teach the patient for a couple of weeks thereafter to place himself in the most comfortable position for urination, and invariably to make gentle pressure over the pubis during the act.

In case of accumulation in the pre-vesical space of pus, or blood, open the skin wound freely, insert the tube into the bladder, thoroughly irrigate and pack gently around the tube. If the tube is made long, its distal end may be inserted into the same bottle as the catheter. The Japanese provide a cheap glass bed urinal which lies comfortably between the thighs and does not tend to upset, but a quart wine bottle may be used.

There is an old rule, which we find in Ashhurst's *Text-book of Surgery*, that we should never operate for stone without having definitely located its presence with a searcher the day before operation, and again immediately before operation. We think the rule an excellent one, and would re-emphasise it in our practice in China. A small stone or a gritty spot in the bladder may be apparent on one day and passed per urethra or be broken up before operation; and even when a stone is present, the precaution of assuring oneself of the fact just before operation is a wise one.

We have stated our preference for the suprapubic operation over litholapaxy. It is the universal preference of those of widest experience in China. Of course Kerr did the perineal operation in the beginning, and later took to litholapaxy for the smaller stones. But that is many years ago. Those who operate for stone frequently in China (Olpp, Kühne, Swan, Cochran, Cole) share with us an overwhelming preference for the suprapubic (or at least cutting) operation, and very rarely resort to litholapaxy. Take Cochran's statistics for any year:

1905.	Suprapubic, 38	Perineal, 2
1907.	Suprapubic, 21	Lateral perineal, 2
1909.	Suprapubic, 54 Litholapaxy, 1	Combined, 3; Perineal median, 1

and so on. The others give about this relative proportion. Now, we know that in India the whole question is viewed differently. Wanlass of Miraj, India, reports recently forty-nine operations for vesical calculus, forty-eight successful, with a proportion of twenty-seven litholapaxies to three suprapubic lithotomies. Take for example Adam, who, in an experience of nearly a thousand stone operations, considers lithotomy to be obsolete. And Keegan says, "litholapaxy * * * is a superior operation to both suprapubic and lateral lithotomy in three important respects, viz., the rate of mortality, in the rapidity of cure, and in being free from cutting."

There is published in the *Indian Medical Gazette* for March, 1909, a resumé of a symposium which has appeared in the *Medical Missions* in India, quoting in the first place Smith, of Jullundur, who states that in competent hands lithotrity stands out alone and is far superior to any cutting operation. He, however, advises English and general American surgeons to avoid litholapaxy, which requires more skill and experience than can be got in Europe or America.

We cannot agree with the first of these conclusions. (We are speaking, of course, of our own experience and readily recognise that these Indian operators are masters of the craft—as are some in China—and fully competent to draw their conclusions accurately. There must be some difference in the conditions; or is it only that both operations are so good that the preference is merely one of personal experience?) As to rate of mortality, in nine years we have lost only one case, and that through the patient's own foolishness. Other surgeons in China have had equally good, or better, results out of larger experience.

Kühne gives the following opinion from his lithotomies in South China.

Death rate for the three operations is as follows:

	Cases	Deaths	Per cent.
Lateral,	22	2	9
Suprapubic,	44	5	11.3
Median,	43	2	4.6

Four-fifths of Dr. Kerr's cases and over two-thirds of Dr. Post's were considered unsuited for the crushing operation, and following the general practice of 25 years ago, were dealt with very largely by the perineal route.

Suprapubic. -After having adopted the Trendelenburg position combined with rectal and vesical distention (year 1898) twenty-four cases have been operated without one death. The five fatal cases occurred in the earlier years of my practice.

The conclusions arrived at after comparing the three methods of lithotomy used in South China in the male are:

1. That the lateral operation is considered to be a dangerous method, offering no advantages over the two other ways of operating, and that it ought no longer to be performed.

2. That the suprapubic operation, when performed as indicated, *i.e.*, putting the patient in Trendelenburg's position, and making use of rectal and vesical distention, may be used in all cases. It is, however, specially recommended for large stones, above

1 1/2 inches in diameter, and for children and boys up to their eighteenth year, boys of that age in China being not so developed as those in western countries.

3. That the median operation performed according to the directions given (dilatation, no laceration or incision of the ring) is to be recommended for all the stone cases met with in adults, where the stone is under 1 1/2 inches in diameter. The ease with which it is performed ought to make it the operation of choice for all those who are at the beginning of their work.

The cases in which the suprapubic route is especially indicated are tumours and foreign bodies in the bladder and diverticuli of the bladder. I believe that by some such technic as I have here shown the suprapubic route is much better and safer as to complications for the removal of calculi than the lithotrite.—*The Cleveland Medical Journal, by William E. Lower.*

Swan, of Canton, who operates on about as many stones as any one in China, still prefers the perineal route, the lateral operation, but never crushes.

"*Calculi* are pretty frequently met with—were satisfactorily cut out during the year."—*Main, Hangchow,* 1907.

About 20 years ago the suprapubic operation was revived. Between 1890 and 1906, Dr. Post performed this operation 39 times, with 9 deaths, as against 122 perineal operations in the same period, with 6 deaths. The larger mortality of the suprapubic list may be accounted for by the following table:—

Operations 1890 *to* 1906.

	No. of Ops.	Average Age.	Av. Duration.	Av. Wt. of Stone
Perineal.........	122	6.9 years.	1.69 years.	5.4 grams.
Suprapubic	39	9 years.	2.68 years.	nearly 30 grams.

With the exception of one huge stone of 350 grams (12 1/4 ounces) removed by Dr. Post in 1881, the largest three stones described were removed by the suprapubic method. These were 166, 150, and 133 grams, respectively.

With regard to rapidity of cure, it is, of course, easier to get a litholapaxy patient up quicker than one who has been cut, although the difference is only a question of a few days—not a week on the average. But one cannot for a minute compare the uncertain evacuation and the poor drainage of litholapaxy with the absolute assurance of complete evacuation and the ideal drainage of either cutting operation. The amount of traumatism also is incomparably in favour of the suprapubic, if not of the perineal, operation. Take a case in which there is a 4- or 5-ounce stone and a bladder thoroughly diseased and full of pus, with threatened invasion of the kidneys. Then ram a number of steel instruments up and down its surface and along the urethra repeatedly; and compare this with a clean cut, a thorough wash-out, and through-and-through rubber drainage. We confess ourselves at a loss to see but one side. Finally, with regard to the freedom from cutting in litholapaxy. Personally, we much prefer cutting to scraping. We believe the average surgeon (perhaps not the master worker) spills more blood with a litholatrite than he does with a scalpel, in getting out a stone. As our literary colleague, Maxwell, says, "I prefer the suprapubic operation for the very reason that it is a cutting operation. It is far better surgery." Then only think of the time under an anæsthetic—five minutes for the perineal, ten minutes for the suprapubic, no matter what the size of the stone: and for litholapaxy, anywhere from half an hour to three hours! In China most of us are very busy.

Shanghai would be a bad place from which to quote a series of stone findings. For example, the stones do not originate here and the patients who come from the south are almost all business people. Besides this, there are far more interesting stone series at hand than our own. Through the courtesy of Drs. Olpp and Kuhne, of Tungkun, we have received the reports of the Tungkun Hospital from 1901 to 1908, inclusive, with the yearly reports of lithotomies and the permission of the doctors to quote the same at length. The summings up are our own as well as the inferences therefrom. The series is well worth a careful study on the part of anyone who is engaged in this branch of work. It is so evidently honest and represents thoroughly well the modern practice in China. The operators "Remarks" are particularly worth reading in connection with the individual cases.

The series represents 189 lithotomies in nine years.

1900= 3.
1901=20.
1902=24.
1903=28.
1904=25.
1905=24.
1906=24.
1907=19.
1908=22.
Total=189.

With regard to occupation the patients were as follows:

Farmers and their families,	91.
Merchants and tradesmen,	21.
Day laborers (coolies),	20.
Artisans,	6.
Boatmen and fishermen,	9.
Soldiers,	2.
Children and miscellaneous,	40.
	189.

Too much should not be inferred from these results. Tungkun is not a very large place and the surrounding farming population is enormous. Still, the number of farmers is striking and this, added to the coolie figures, would tend to strengthen the theory that hard labor in the hot sun has a strong influence in the causation of stone. The skin in this case takes a large part in the excretory function and the bladder is insufficiently flushed. But other potent factors must enter into the question, besides this one.

The average duration of the stone before operation is one year and eight and one-half months.

The longest time is eighteen years.

The shortest time is one month. (Patient's symptoms, of course.)

With regard to the age of the patients,

1 to 5 years,	5 cases.	
6 to 10 years,	15 cases,	20 cases.
11 to 20 years,		11 cases.
21 to 30 years,		28 cases.
31 to 40 years,		36 cases.
41 to 50 years,		43 cases.
51 to 60 years,		37 cases.
61 to 70 years,		12 cases.
71 to 80 years,		1 case.
	Total,	188 cases.

This might be taken as a steady progression with advancing years. No doubt many die of the disease without coming to treatment. The disease is, however, well represented at all ages.

As to chemical composition in the Canton district,

Urates and uric acid,	115
Phosphates,	55
Oxalates,	17
Mixed,	2
	189

There seems to be only slight relationship between the occupation of the patient and the composition of the stone.

The oxalate stones are divided as follows:

Farmers,	10
Boatmen,	2
Coolies,	1
Traders,	1
Children,	3
	17

Excepting the urethral and preputial cases, which were all successfully treated by dilatation and extraction, the operative procedures were confined to two methods, the median perineal and the suprapubic. Apparently the crushing operation has not figured in this series at all. There is no definition of the reasons for selection of operation, but an estimation of the probable size of the stone appears to have largely influenced the operators. The numbers and results are as follows, and under results are included deaths from all causes, some two or three seeming, however, to have been independent of the special operative procedure.

	Operations	Recoveries	Uncertain	Deaths
Median perineal . . .	98	92	1	4
Suprapubic	83	77		6

Considering that the suprapubic route is used in the more advanced cases there seems to be little difference in the mortality to be expected. In fact, it is probable that in any straight series of one hundred cases the suprapubic operation would give a lower mortality than the median would in the same series. The results of both, in the hands of these operators is as good as the best of the Indian results.

It is also apparent that in later years the operators have developed a preference for the suprapubic route.

It is worth noting that two or three of the cases of this series gave troublesome secondary hemorrhage.

The series follows in detail.

SERIES OF LITHOTOMIES, KUHNE AND OLPP, TUNGKUN, 1900–1908.

(By Permission.)

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1900.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
1	26	Chan Leung Wai	Tong Ka Tsùn.	Farmer	2 years	March 30	Urates	1	5½:3½ cm.	745 gr.	Supra-pubic	Recovery	Owing to fever, bladder-suture removed on following day. Self-retaining catheter. Removed on 6th day. Secondary suture on 8th day. Discharged cured on 18th day.
2	30	Un Yat On.... ...	Cha Un. . . .	Merchant	1½ years	June 20	Urates	1	5:4 cm.	605 gr.	Median peroneal	Recovery	Drainage. Discharged cured on 28th day.
3	62	Lin Sui Ling......	Pak Sha....	Farmer's wife	1 year	Nov. 23	Urates	1	5½:4 cm.	1170 gr.	Supra-pubic	Recovery	Bladder suture and self-retaining catheter. The latter removed on 4th day. Urine passed spontaneously. Bladder wound again burst open on 9th day. Fistula closed on 35th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1901.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
1	38	Lai lun shu	Wong ch'ung	Farmer	1½ years	Jan. 2, 1901	Urates	1	5.5 cm: 4.5 cm.: 3.5 cm.	65	Supra pubic	Recovery	On the 5th day after operation the catheter was removed, on the 7th day bleeding occurred, catheter again introduced and removed on the 9th day. On the 10th day no urine passed through the wound. He left well on the 28th day.
2	44	Un tai in	Wan tong	Trader	9 months	Jan. 7	Urates	1	3. 2.5: 1 cm	10	Supra-pubic	Recovery	On the 2nd day the catheter was removed. On the 3d day no urine passed through the wound, no fever. On the 18th day he left well.
3	29	U ving t'sun	To kau	Farmer	2⅔ years	Jan. 11	Urates	1	6.5: 4.5: 4 cm.	105	Supra-pubic	Recovery Left with a fistula	No fever. On the 16th day no urine passed through the wound. On the 17th day over-eating, next day vomiting. Temp. 39.3. Temp. gradually fell to normal. On the 31st he left with a fistula.
4	50	Fung kam man	Tung heung.	Farmer	6 months	Jan. 21	Urates	1	4.5: 3.5: 2.5 cm.	34	Supra-pubic	Recovery	On the 10th day wound closed. On the 19th day went healed.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1901.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
5	28	Chung an ts'cung. .	Wang hang. . .	Farmer	7 years	Jan. 28	Phosphates	1	Fragments	Gramm. 23	Supra-pubic	Seeremarks in text	On the day after the operation temp. 39.2. Vomiting. Temp. gradually fell to normal. Was taken home on the 9th day where he died on the 12th day.
6	32	Wong sz tsun.	Kap ti.	Farmer	2 months	Feb. 1	Urates	1	4: 1.5: 1.5 cm.	15	Supra-pubic	Recovery	On the 7th day catheter removed, on the 9th day no urire through the wound, on the 17th day went home well.
7	57	Wong fuk yau.	Pok ha.	Boatman	1 year	April 1	Urates	2	5:3.5:2.5 cm. 4.5:3.5:2.5 cm.	84	Supra-pubic	Died	On the day of the operation temp. 38.8. Symptoms of shock, no vomiting, no peritonitis on the 7th day. Temp. 37.5. Death.
8	53	Li ch'ong yip.	Shik ku.	Farmer	10 months	April 15	Urates	1	3.5: 3: 1.5 cm.	18	Median	Recovery	On the 5th day catheter removed, on the 10th day bleeding. Temp. 39, on the 11th day. Temp. normal, on the 89th day went home well.
9	75	Ch'an shing tso	Tung kun (Nga mum)	Yamen runner	3 months	June 24	Urates	1	2.2: 2: 1 2 cm.	7	Median	Recovery	Temp. normal, on the 2nd day catheter removed, on the 8th day wound closed, on the 11th day went home well.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1901. Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No of stones	Diameter	Weight	Mode of operating	Results	Remarks
10	60	Yiu wing p'in	Tung shan	Farmer	1 year	July 15	Phosphates	1	4.5: 3.5: 2 cm.	Gramm 22	Median	Recovery	On the 3d day catheter removed, on the 17th day urine removed per urethram, on the 29th day wound closed, on the 31th day went home well
11	50	Wong p'ing po	Fu mum	Military officer over 200 men	1½ years	July 22	Urates	2	5:3 5:2 cm. 4.3 5:2 cm	55	Supra-pubic	Recovery	On the 4th day catheter removed, on the 10th day no urine through the wound, on the 30th day went home well
12	45	Un tai in	Wan t'ong	Trader	3 months	July 26	Urates	1	2.5:2: 1.5 cm.	4	Median	Recovery	On the day after the operation bleeding occurred, on the 2d day catheter removed, on the 8th day wound closed, on the 19th day went home well.
13	41	Wong ch'un lam	Chik kong	Farmer	11 months	July 31	Urates	1	4.3: 1.5 cm	10	Median	Recovery	On the day after the operation distention of the abdomen, tympanitis, on the 4th day morning temp. 39.8, on the 4th day evening temp. 37.7 then normal temp., on the 27th day went home well.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1901.—Continued.

No	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight Gramm	Mode of operating	Results	Remarks
14	49	Lau hong p'ing	Ki shik	Lime burner	4 years	Aug. 7	Urates	1	5:4: 2.5 cm	49	Supra pubic	Recovery	On the 3d day temp. 38.3, on the 5th day catheter removed, on the 25th day no urine through the wound, on 43d day went home well.
15	38	Leung on lam	Li tsung ngong	Farmer	5 months	Aug. 28	Urates	1	3:1.5: 1 cm.	5	Median	Recovery	On the 2d morning catheter removed, on the 2d day evening retentio urine catheter replaced, on the 4th day catheter removed, urine drawn per urethram. On the 10th day no urine through the wound. On the 27th day went home well.
16	33	Li kai chi .	Shik ku	Trader	1 year	Sept. 18	Urates	1	4:3.5: 2 cm	22	Median	Recovery	On the 4th day catheter removed, on the 11th day urine drawn per urethram, on the 27th day went home well
17	46	Chóng po tsung.	Pok ha	Workman	14 months	Nov 25	Urates	1	4.3. 2.5 cm	26	Supra-pubic	Died	On the 3d day after operation temp. 39.2, on the 4th day catheter removed. Abdominal tenderness. No vomiting peritonitis. On the 7th day death.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1901.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
18	43	Yip mi fuk. .	Kun k'iu kau .	Trader	2 months	Nov. 29	Urates	1	2:1: 0.7 cm.	2	Median	Recovery	On, the 2d day catheter removed, on the 4th day one small fowl's bone found its way from the rectum through the wound, causing a recto-urinary fistula. On the 30th day the fistula closed, and on the 34th day left well.
19	45	Un chik yan .	Song un .	Coolie	1 year	Dec. 9	Urates	1	2.5:2: 1 cm.	6	Supra-pubic	Recovery	On the 4th day catheter removed. No fever. On the 28th day went home well.
20	45	Ch'an wai fu .	Luk fu. .	Farmer	2 months	June 5	Urates	1	3:2: 2.5 cm.	8	Urethra	Recovery	Preputial calculus.

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No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
1	60	Yeung k'ing chau.	Tsang po. ...	Trader	3 years	Jan. 13, 1902	Phosphates	1	6 cm. 4 cm. 3.5 cm.	Gramm. 82	Suprapubic	Recovery	No suture, catheter in the wound. On the 30th day went home well.
2	22	Yip po chan......	To kau.......	Trader	16 months	Jan. 20	Phosphates	1	7 cm. 5 cm. 4.5 cm.	151	Median	See remark in text.	Hour-glass form, the smaller portion in the urethra, the larger in the bladder, the circular fibres of the compressor urethra forming a deep constriction. Highest temp. 101. On the 3d day catheter removed. On the 4th day exanthema papulosum developed over the body, on the 6th secondary hæmorrhage. On the 7th day was taken home.
3	39	Ng yau hon......	T'in sam Tsang shing	Farmer	2 years	April 7	Phosphates	1	3.5 3 2.5	22	Suprapubic	Recovery	Wound closed on the 20th day. On the 28th day went home well.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1902.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm			
4	41	Un kau ch'i.	Tung kun	Farmer	10 months	April 9	Phosphates	1 ... Hair pin	Fragments .. 11 cm 1 cm. 0 1 cm	20 6	Median	Recovery	The patient tried to remove an urethral stone with a wide hair plait used by Chinese women, the plait slipped into the bladder. On the 8th day, after operation, temp. was 104. An abscess developed which was evacuated on the 11th - on the 29th he went home well.
5	62	Yip t'sing sau	Liu po	Farmer	6 months	April 16	Phosphates	1	4 5 3 5 2	30	Median	Left with a fistula	On the 3d day his temp was 104.3, fell gradually. On the 36th day went home.
6	55	Lo tsun k'wai	Chak ka t'sun	Tailor	2 years	April 23	Phosphates	1	6 4 3 5	72	Supra pubic	Recovery	On the 21st day the wound was closed. On the 27th day he went home well.
.	31	Man muk in	Hang mi Sanon	Fisher	18 months	May 20	Phosphates	1	6 3 5 3	53	Median	Recovery	Hepatic dullness no longer made out due to tympanitis. Temper. normal. On the 18th day epididymitis causing a rise of temp., 104. On the 29th day he went home well

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1902.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
8	54	Ng K'an tso.	T'in sam Tsang shing.	Farmer	1 year	June 4	Phosphates	1	5 3.5 3	45	Median	Recovery	33 days after operation suffered suddenly from retentio urinæ with a rise of temp. 102, afterward got rapidly well; went home on the 50th day.
9	29	Lo p'un ki.	Li U t'sun	Rice pounder	10 months	July 21	Phosphates	1	4.5 3 3	33	Median	Recovery	On the 12th day after operation no urine came through the wound—went home on the 27th day.
10	55	Fong shau tang.	Ho t'in.	Merchant	14 months	July 30	Phosphates	1	4.5 3.5 2	17	Median	Recovery	For 8 days after operation was fed per rectum. On the 24–25th had dengue fever. On the 34th day went home well.
11	34	Lau kam yau.	To kau.	Boatman	5 months	Sept. 10	Phosphates	1	4 3 2	22	Median	Recovery	Normal all through. Went home on the 23d day.
12	27	Li t'sau ming	Mong ngau tun	Merchant	4 years	Sept. 15	Phosphates	2	4 3 2.5 Fragments	23 48	Median	Recovery	On the 3d day catheter removed, causing an elevation of temper., 104.4. Epididymitis followed by suppuration of the right testis which came out on the 72d day. On the 80th day he went home well

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1902.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
13	37	Li ping tang .	Pak ma. . .	Farmer	13 months	Sept. 22	Phosphates	1	3 2 1	8	Median	Recovery	Went home well on the 28th day
14	37	Ch'an mi t'im	Wang pok	Farmer	7 months	Sept. 26	Phosphates	1	Fragments	25	Median	Recovery	On the 20th day temp 102.2 Epididymitis. On the 29th day evacuation of pus. On the the 34th day went home well.
15	38	T'sang fo t'seung .	Ch'eung chau .	Farmer	4 months	Sept. 29	Phosphates	1	3 2 1	7	Median	Recovery	Normal all through, went home on the 40th day.
16	51	Wong chan tak. . .	Tai shap wai .	Farmer	2 years	Oct. 24	Phosphates	1	5 3.5 2.5	49	Median	Recovery	Normal all through, went home on the 28th day.
17	39	Un wan tsai.	Wan t'ong.	Farmer	6 months	Oct. 27	Phosphates	1	3.5 2 1	8	Median	Recovery	Normal all through, went home on the 25th day.
18	36	Leung kai on	Leung t'aut'ong	Farmer	11 months	Oct. 31	Phosphates	1	5 3 5 2	34	Median	Recovery	On the 22d day closure
19	20	Uu fung lun.	To kau . .	Farmer	10 months	Nov 5	Urates	1	Fragments	25	Median	Recovery	Normal all through, went home on the 28th day.
20	34	T'soi wai hong	Pik t'au, tai wai	Farmer	15 months	Nov. 7	Phosphates	1	5 3.5 2	36	Median	Recovery	Normal all through, went home on the 24th day.
21	26	Man t'san on .	T'am t'au, San on.	Farmer	8 months	Nov. 10	Phosphates	2	4.5 4.2 2 and 2:2:1	25	Median	Recovery	On the 3d day temp. 103.2. Then rapidly well; went home on the 12th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1902.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
22	6	K'i ship ch'ün....	Tung kun. ...	Son of a policeman	19 months	Nov. 18	Phosphates	1	2 1.5 2	4	Supra-pubic	Recovery	On the 5th day the catheter was removed; for 4 days the temp. was 102.2, then gradual fall, left on the 20th day well.
23	50	P'un san kwong...	Man ka long...	Farmer	14 months	Nov. 30	Phosphates	1	4 3 2.5	25	Median	Recovery	Normal. Went home well on the 18th day.
24	23	Chiu t'sai wong....	Sheung k'iut'au	Farmer	31 months	Dec. 29	Phosphates	1	4.5 3.5 2	32	Median	Recovery	Came with a suppurating paraphimosis, which was treated before. On the 8th day after the oper. his temp. rose 105.2, then fell gradually. On the 21st day the wound was closed. On the 25th day went home well.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1903.

No	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
1	12	So Pni Fai	Ho Kong	Schoolboy	6 years	Jan 2, 1903	Uric acid	1	1 in 5 0 in 6 0 in 6	4½ dr	Supra pubic	Recovery	Catheter removed on the 5th day after operation On the 30th day went home well
2	13	Mak Yung Kan	Pak u lik San On	Farmer	7 years	Jan 5	Uric acid	1 1 urethal stone	Broken 0 in 4 0 in. 3 0 in. 2	4 dr 30 gr	Supra-pubic Incision of urethra	Recovery	On the 13th day temp 103, on the 24th wound closed; on the 28th abscess of scrotum, on the 56th left with a urethral fistula.
3	4	Tang Shat Tung	Tong mei	Son of a teacher	7 months	Jan. 9	Uric acid	1	1 in [illegible] 0 in. 6 0 in 5	135 gr	Supra-pubic	Recovery	On the 24th day went home well
4	43	So Wan Tsung	Kuk Hoi	Farmer	1 year	March 9	Oxalate of calcium	1	2 in. 5 1 in 6 1 in 1	3 oz	Median	Recovery	Recovered rapidly, although the stone was a large one.
5	23	Chan Pai Lok	Shui Pui San On	Farmer	1 year	March 23	Uric acid	1	1 in 4 1 in. 2 0 in 4	185 gr	Median	Recovery	
6	45	Wan Wua Cho	Tungkun	Fireworks fabrication	3 years	April 8	Uric acid	1	2 in 3 1 in 6 1 in 3	2 oz 4 dr	Median	Recovery	The weak state of his health, before the operation, interfered with closure of the wound. He left with fistula
7	31	Wong Tse Yan	Shek Kong	Farmer	5 years	April 15	Uric acid	1	1 in 3 1 in 3 0 in 7	3 dr 5 gr	Median	Recovery	When he left he had not yet regained full power of the sphincter
8	14	Chik Yan Kei	Tit Chung	Farmer	1 year	April 22	Oxalate of calcium	1	Small stone	25 gr	Supra pubic	Recovery	Double drainage Suprapubic wound 4 days. per urethram 3 days

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1903.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
9	58	Ho Shai Hang....	Tse Kong	Farmer	1 year	May 11	Uric acid	1	Broken	135 gr.	Median	Recovery	On the 14th day went home well.
10	51	Chan Kwai Wong.	Wan Tong	Farmer	1 year	May 15	Uric acid	1	2 in. 1 in. 6 0 in. 6	1 oz. 4 dr.	Median	Recovery	Overdilatation of the sphincter. Incontinentia.
11	52	Lau Yip Tsau...	Tit Hang. .	Farmer	2 years	May 19	Uric acid	1	2 in. 1 in. 4 0 in. 6	1 oz. 4 dr 20 gr.	Supra-pubic	Recovery	Double drainage. On the 13th day wound closed.
12	17	Chan Kan Pui...	Shui Pui San On	Workman	1 year	May 22	Uric acid	1	1 in. 5 1 in. 2 0 in. 6	6 dr.	Median	Recovery	Circumcision performed on the same day. On the 11th day wound closed.
13	35	Tang Tsoi Wong	Wo Leng. .	Farmer	1 year	June 1	Uric acid	1	1 in. 6 1 in. 3 1 in. 1	1 oz.	Supra-pubic	Recovery	Double drainage.
14	31	Lau Ping Sham.	Kei Shek.	Farmer	1 year	June 5	Uric acid	1	1 in 4 1 in. 3 0 in. 4	½ oz.	Supra-pubic	Recovery	Double drainage.
15	40	Chim Chong Wa. .	Ma T'au....	Farmer	1 year	June 17	Uric acid	1	1 in. 6 1 in. 5 0 in. 6	5½ dr.	Supra-pubic	Recovery	Double drainage.
16	43	Chung Mui Shau. .	Chai Pin . .	Farmer	1 year	June 26		1	Stone lost	. . . .	Median	Recovery	
17	55	Mok Hau Fong. .	Ma Chung....	Gambler	2 years	July 10	Uric acid	4	Largest stone 2 in. 2 1 in. 6 1 in. 1	Together 3 oz. 3dr	Median	Recovery	Incontinentia.
18	54	Wong Kun Peng.. .	Lung Ngan Kong	Blind	1 year	Aug 27	Uric acid	3	Small stones	2 dr.	Median	Recovery	Was suffering from asthma.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1903.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
19	[illegible]	Fong Yan Sik	Tai Tsung Long.	Farmer's son	1½ years	Sept. 4	Uric acid	1	0 in. 6 0 in 5 0 in. 4	1 dr.	Supra-pubic	Recovery	On the 19th went home well.
20	48	Chak San To	Chau Ka Tsun.	Farmer	1 year	Sept 9	Uric acid	1	1 in. 7 1 in. 5 0 in. 7	7 dr. 50 grs.	Median	Recovery	
21	54	Cheung Man Chung	Fuk Lung...	Farmer	1 year	Sept 19	Uric acid	1	Small stone	160 grs	Median	Recovery	
22	68	Lau Shin Heng.. .	Shui Nam. . .	Farmer	4 years	Sept. 22	Uric acid	1	1 in. 4 1 in. 2 0 in. 6	4 dr. 50 grs.	Median	Recovery	
23	38	Lo Wa Shui .	Chan Po . . .	Boatman	4 years	Oct 5	Uric acid	1	1 in 7 1 in. 1 0 in 6	7 dr.	Median	Recovery	
24	49	Chan Lun Wong	Tso Ha San On	Fisher	2 years	Oct 9	Oxalate of calcium	1	1 in 6 1 in 2 0 in 4	4 dr 30 gr	Median	Recovery	
25	66	Cheung Wai Po.	Wong Tsun.	Business	6 years	Oct 21	Uric acid	4	Largest 1 in. 6 1 in. 4 1 in. 0	Together 4 oz. 50 gr.	Median	Recovery	Cure delayed by an attack of elephantiasis.
26	34	Yio Yung Mun .	Heung Sai	Farmer	10 years	Oct. 26	Uric acid	1	Fragments	1 dr 50 gr	Median	Recovery	
27	6	Liu Mui Tsai.	Po Cheung.	Son of a farmer	1 year	Oct. 30	Uric acid	1	1 in. 4 1 in. 0	3 dr 30 gr.	Supra-pubic	Recovery	Double drainage.
28	24	Leung Kwong Fai.	Sheung Kong.	Matting fabricant	1 year	Nov. 30	Uric acid	1	1 in. 6 1 in. 3 0 in. 6	7 dr. 20 gr.	Median	Recovery	Slight incontinentia.

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No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
1	54	Ng Yü Sheng	Nga Iu	Labourer	1½ years	April 8	Uric acid	1	3.8:2.8: 2 cm.	½ oz.	Median	Recovery	
2	6	Tam Chik Yin	Shek Lung	....	2 years	April 20	Uric acid	1	3.2:1.3cm.	126 gr.	Supra-pubic	Recovery	
3	9	Chan Fong Nang	Tai fan	....	3 years	May 2	Phosphate	1	3.8:1.8: 2 cm.	133 gr.	Supra-pubic	Recovery	
4	65	Yün Kun Chi	Wan Tong	Labourer	2 years	May 9	Uric acid	1	3.2:2.4: 2 cm.	½oz.15gr.	Median	....	See remarks in text.
5	41	Keung Sit Yün	Ku Sut San on	Artisan	1 year	May 16	Uric acid	1	4.8:4.5: 1½ cm.	1 oz.	Median	Recovery	
6	58	Chan Ah Ho	Tong Pui	Labourer	1 year	May 23	Uric acid	1	4.5:3.8: 2.7 cm.	1¼ oz	Median	Recovery	As he left some drops were still coming through the wound.
7	55	Ng Kit Tsau	Shek ka tsün San On.	Labourer	2 years	May 27	Uric acid	13	Hazelnut	1 oz.	Median	Recovery	
8	48	Chan King Fuk	Fuk Wing San On.	Fisher	3 years	May 30	Uric acid	1	5.2:3.2: 2.5 cm.	1oz.2½dr.	Median	Recovery	
9	41	Mak Tsan Fun	Kap Shui au San On.	Labourer	5 years	June 7	Uric acid	1	4.5:3:2 cm.	½ oz. 1 dr.	Median	Recovery	
10	11	Leung Tsan Sheng	Pak ho	Schoolboy	3 years	June 10	Phosphate	1	5.5:2.8: 2.8 cm.	1 oz.	Supra-pubic	Recovery	
11	6	Tse Kam Sz	Tai t'ong tau.		3 years	June 13	Uric acid	1	2.8:2.2: 1.8 cm.	110 gr.	Supra-pubic	Recovery	An abscess occurred which delayed the process of healing, child fed by rectum.
12	38	Chiu Ying Tong	Wing ning kei	Labourer	1 year	June 20	Uric acid	1	Fragments	½ oz.	Median	Recovery	Abscess formed on both sides of the bladder evacuated through the wound.
13	17	Tseng Cheung Shau.	Pak Sha	Labourer	6 years	June 29	Uric acid	1	4.2:2.3: 2.2 cm.	½ oz.	Supra-pubic	Recovery	

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1904.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
14	13	So Tsik Lui	Kuk hoi	Labourer	6 years	June 24	Uric acid	1	3.5:4: 2.8 cm.	1oz. 30gr.	Supra-pubic	Recovery	
15	58	Fong Tak Wo	San on.	Business	4 years	July 11	Uric acid	1	3.3:2.7: 1.5 cm.	2½ dr.	Median	Recovery	
16	24	Tseng Kwok Fuk	Pak Sha	Labourer	6 years	July 29	Uric acid	1	4.8:4:3 cm.	1¼ oz.	Median	Recovery	
17	10	Tsoi Yip Fuk	Ngau Shi Tong	School boy	2 years	August 26	Oxalate of calcium	1	2.5:1.5: 2 cm	¼ oz	Supra-pubic	Recovery	
18	35	Tang Kwok Scheung.	Wai tak	Labourer	3 years	Aug 31	Uric acid	1	5:3.5: 2.5 cm.	1¼ oz	Median	Recovery	
19	50	Fong Tsau Wong	Ho tin	Labourer	3 years	Oct. 24	Uric acid	1	4.5:3.5: 2.5 cm.	1¼ oz.	Median	Recovery	Healing delayed a stricture having formed treated by forcible dilatation
20	37	Tsai Yu Sam	Wong Tsun	Worker	3 years	Oct 31	Uric acid	1	5.5:3.8: 3 cm.	2 oz	Median	Recovery	
21	7	Lai Kit Seung	Lo Tin.	.	1 year	Nov 25	Uric acid	1	Fragments	50 gr	Supra-pubic	Recovery	
22	37	Lei Tok Sheng	Ko Ying	Shipman	3 years	Dec 2	Oxlate of calcium	1	3.5:2.4: 1.8 cm	3 dr	Median	Recovery	Slight dripping.
23	5	Yip Fu Tung	Tsun mei		3 years	Dec 6	Urate of ammonia	1	2.5:2: 1.3 cm	¼ oz.	Supra pubic	Recovery	
24	47	Lau Ying Chu	To Kau	Business	1 year	Dec 19	Uric acid	1	3.5:2.8: 1.5 cm	¼ oz ½ dr	Median	Recovery	
25	6	Ho Lok on	Tai fan			Oct 10	Uric acid	1	Fragments	¼ oz	Dilatation of urethra	Recovery	A girl; the stone broke the bladder, the fragments being removed with the forceps.

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No	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
1	57	Yan Ping Nam	Tai Ha Po .	Farmer	2½ years	Jan 2	Uric acid	1	Fragments	5	Median	Recovery	Went home on the 15th day.
2	52	Leung Fu Shan...	To Kau... ..	Business	2 years	March 27	Uric acid	1	5:4:3 cm.	43	Median	Recovery	Went home on the 25th day.
3	41	Cheung Kun Wa	Tsang Shing .	Farmer	1½ years	March 31	Uric acid	1	4:3:1.5 cm	18	Median	Recovery	On the 26th day after the operation the wound was sutured, giving a good result.
4	39	Tse Hung Kong	Sai T'in *San On.*	Farmer	9 months	May 22	Uric acid	1	4:3.5:3 cm.	27	Median	Recovery	Went home on the 21st day.
5	56	Kwok Yau T'im	Shik Tsui T'au	Fisher	2 years	June 2	Phosphates	6	Pea	0.5	Median	Recovery	Stricture of urethra, abscess in perineum, ulceration of the penis-skin transplantation. The patient was 80 days under treatment. Went home well.
6	42	Leung Iu P'ing .	Lung Wa	Farmer	1 year	June 5	Mixed	1	3.5:3:1.5 cm.	14	Median	Recovery	Hydrocele. Went home on the 15th day.
7	67	Wan P'ing Tung..	Kan Sha Chau	Farmer	1½ years	June 21	Phosphate	1	3.5:2.5:1.5 cm.	13	Median	Recovery	Went home on the 37th day.
8	30	Li Tse San	Tung T'sun	Farmer	10 months	June 30	Urate of ammonium	1	5:4:3.5 cm.	36	Median	Recovery	Went home on the 34th day.
9	58	Un Pak Hoi	Ch'a Shan.	Farmer	1 year	July 28	Uric acid	2	5:3.5:2 3:2.5:1.5 cm.	28 9	Median	Recovery	Went home on the 21st day.
10	21	Ch'an Chü Hoi .	Pak T'au Kong *San On*	Farmer	1½ years	Sept 4	Phosphate	1	6:4.5:3.5 cm.	74	Median	Recovery	Went home on the 16th day.

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No	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
11	44	Leung Shing Tsau	Pak Mau Wai	Farmer	1 month	Sept 8	Uric acid	1	0.2:0.2: 0.1 cm.	0.1	Median	Recovery	Operated on 17 years ago for stone. Went home on the 26th day.
12	25	Leung Wai Kau ..	Pok Lo..	Farmer	6 months	Sept. 11	Uric acid	1	3.5:3: 1.5 cm.	9	Median	Recovery	Went home on the 30th day.
13	25	Yip In P'ui.	Shek Lung	Business	10 years	Sept 15	Uric acid	1	5:4.3 cm.	60	Median	Recovery	Went home on the 26th day.
14	60	Fong U Tau. ...	Ho Tin	Farmer	3 months	Sept. 25	Phosphate	1	3:2:1.3 cm	6	Median	Recovery	Went home on the 12th day.
15	44	Wong U Shun ...	San Ki ..	Farmer	18 years	Sept. 27	Oxalate of calcium	1	5:4:3 cm.	64	Median	Recovery	Secondary suturing 22d day of the incision. Went home well.
16	47	Ch'an Wan T'soi.	Ch'a Shan	Farmer	4 months	Sept. 29	Phosphate	1	Fragments	17	Median	Recovery	Went home on the 22d day.
17	63	Un Ling T'sung. .	Leung T'au T'ong	Fisher	2 years	Oct. 4	Phosphate	1	5.5:4: 3 cm.	57	Median	Recovery	Went home on the 27th day.
18	45	Un Kau Shi .	On Tseng Heung	Farmer	3 months	Oct. 13	Phosphate		Fragments rushgrass	6	Median	Recovery	4 years ago a stone and a hairpin removed from the bladder, this time a stone and bits of straw encrusted with phosphates were removed He went home on the 37th day.
19	60	Wan Hing Pang .	Sai K'ai . ..	Farmer	1½ years	Oct. 16	Phosphate	1	4:3.5:2 cm.	18	Median	Recovery	He went home on the 40th day.
20	22	Fong Hop Kin ..	Ho T'in.. . .	Farmer	4 months	Oct. 18	Phosphate	1	2.5:2: 1.5 cm.	4	Median	Recovery	He went home on the 33d day

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1905.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
21	26	Fung Po Yau. . .	Shik Lung . .	Labourer	3 years	Nov. 6	Uric acid	1	3.5:3:1.5 cm.	16	Median	Recovery	He went home on the 34th day.
22	40	Lau Ying Ch'un. . .	To Kau. . .	Business	3 years	Nov. 13	Oxalate of calcium	1	4.3:2.5:1.5 cm.	17	Median	Died	Emaciated and weak, suffering also from spinal curvature: died 11 hours after the operation.
23	10	Fong Tsau Hei.	Kai Tau.	Schoolboy	4 years	Nov. 20	Uric acid	1	4:3:2.3 cm.	24	Supra-pubic	Recovery	Went home on the 37th day.
24	51	T'soi Lin Fat. .	San Ki.	Farmer	1 year	Dec. 8	Uric acid	2	5:3.5:2 cm. Pea	26 0.5	Median	Recovery	Went home on the 28th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1906.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm			
1	48	Ngai U Cheung	Chu Ping Sha	Farmer	8 months	March 9	Uric acid	1	4.5 3. 2.5 cm.	30	Median	Death	Died from diarrhœa on the 12th day after operation.
2	43	Lo Chan Wan	Tai uk Chong	Farmer	8 months	March 16	Oxalate	1	5.3 5. 2 5 cm.	35	Median	Death	Had an attack of acute mania which lasted 8 hours and exhausted his strength; he died 6 days after the oper.
3	65	Chan Kam Tseung	Chung Tong	Farmer	2 years	May 28	Uric acid	frag.		4	Median	Death	Hæmorrhage. Died the day after the operation.
4	25	Man Kau Yu	Chan Hau	Farmer	8 months	June 1	Uric acid	1	5 3 5 1 5 cm.	30	Supra-pubic	Recovery	Suture of the bladder. Left well on the 23d day
5	32	Wan On In	Che Ku Hang	Farmer	1½ years	June 13	Uric acid	1	5 3 5 2.5 cm	30	Supra pubic	Recovery	Suture of the bladder. Left well on the 21st day
6	44	Lei Kam Kwan	Sha Po	Farmer	1½ years	June 20	Phosphate	3	2 7 1 5 1:0 8 0 5 cm	0 5	Supra-pubic	Recovery	Suture of the bladder Left well on the 20th day
7	8	Shek Yun Wan	Nam She	Cowherd	3 years	June 27	Phosphate	1	Pea size 2 2 2 1 2 cm	3	Supra pubic	Recovery	Suture of the bladder. An abscess formed which on the 12th day discharged. Left well on the 37th day.
8	45	Tang Shu Wai	Tung Kun	Business	¾ year	July 9	Uric acid	1	4 3:3 5 1 7 cm	10	Supra-pubic	Recovery	Drainage of the bladder Left well on the 28th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1906.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm			
9	39	Yip Tung Kwai.	Fau Chuk Shan	Farmer	2 years	July 10	Oxalate	1	4.8:4: 3.3 cm	36	Supra-pubic	Recovery	Wound of the rectum. Suture. Left well on the 42d day.
10	42	Wong Pik Ting...	Hau Kai.. .	Workman	4 years	July 11	Uric acid	1	3.8:3.5: 1.5 cm.	10	Supra-pubic	Death	Suture of the bladder. Peritonitis. Death on the 7th day.
11	45	Fu Hing Pui . .	Tung Shan...	Farmer	2 years	July 12	Oxalate	1	7.5:5.5: 3 cm.	105	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 36th day.
12	31	Leung Ka Nu. .	Mui Sha..	Farmer	14 months	July 13	Compound	1	4.5:3.5: 1.5 cm	18	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 33d day.
13	26	Chiu Ying Koi .	Chiu Uk Tsun	Farmer	10 months	Sept. 19	Phosphate	1	4.5:3: 2 cm.	15	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 27th day.
14	37	Tang Nok Lam	Fuk Lung. .	Business	10 months	Sept. 21	Uric acid	1	1:0.8: 0.4 cm.	1	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 26th day.
15	18	Ng Tiu Shun.	Nga Yiu	Farmer	1½ years	Sept. 24	Phosphate	1	4:3.5: 2 cm.	18	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 38th day.
16	43	Yip Kam Pui	King Shan ..	Farmer	2 years	Sept. 26	Phosphates	1	3.5:3: 1.5 cm.	14	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 24th day.
17	60	Tam Yi Pui .	Tai Ning.....	Business	6 months	Oct. 3	Phosphate	1	4.3:4.2: 2.5 cm.	33	Supra-pubic	Recovery	Drainage of the bladder Left well on the 17th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1906.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm			
18	20	Tang Sing Kwai	To Tei Hing	Farmer	2 years	Oct. 5	Uric acid	1	4.3.2.5 cm.	23	Supra-pubic	Recovery	Drainage of the bladder Left well on the 24th day.
19	30	Yip Lo Tsai	Siu Hang.	Farmer	2 years	Oct. 15	Uric acid	1	3.5:3. 2: cm	13	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 20th day.
20	30	Yip Pang Kwai	Tai Lo Sha	Workman	5 years	Oct. 17	Phosphate	1	2.5:1.5: 0.8 cm.	3	Supra-pubic	Recovery	Drainage of the bladder Left well on the 37th day.
21	30	Wong Yat Hong	Shek Kong.	Farmer	3 years	Nov. 9	Uric acid	1	5.5:4: 3 cm.	55	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 31st day.
22	45	Chan Hing Tsoi	Tong Kok...	Farmer	1 year	Nov. 16	Uric acid	1	5:3.5: 1.5 cm.	25	Supra-pubic	Recovery	Drainage of the bladder. Left well on the 24th day.
23	47	Yip Wo Hing	Fau Chuk Shan	Farmer	4 years	Nov. 21	Uric acid	1	5.5:4: 2 cm.	40	Supra pubic	Recovery	Drainage of the bladder. Left well on the 29th day, wound not entirely closed.
24	59	Chan Siu Tsun	Tong Kok...	Farmer	1 year	Dec 7	Oxalate	1	4.5:3 5. 3 cm	35	Supra-pubic	Recovery	Drainage of the bladder Left well on the 22d day

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1907.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Results	Remarks
										Gramm.			
1	41	Li yung so	Ngo u chau	Farmer	1 year	May 29	Uric acid	1	5:3.5: 2.0 cm.	25	Median	Recovery	Left well on the 21st day.
2	47	Yeung kai so	Cha shan	Farmer	10 months	June 3	Uric acid	1	Fragments	6	Median	Recovery	Left well on the 34th day.
3	38	T'ai yun sing	San on	Farmer	1 year	June 7	Phosphate	1	6.0:4.5: 3.1 cm.	72	Median	Recovery	Left well on the 45th day.
4	4	Chung yiu fong	Yam p'ing	Child	1 year	June 10	Uric acid	1	3.4:1.5: 0.9 cm.	3	Suprapubic	Recovery	Left well on the 24th day.
5	25	Cheung muk yau	Ap chi ling	Farmer	6 months	June 14	Phosphate	1	3.0:2.5: 1.8 cm.	9	Median	Recovery	Left well on the 38th day.
6	5	Ch'an a po	Chau uk k'ai	Girl	6 months	June 25	Phosphate	1	Fragments	4	Median	Recovery	Left well on the 17th day.
7	43	Ch'an yeung po	Shau kai	Business	10 months	July 5	Uric acid	1	4.2:4: 2.0 cm.	19	*	Recovery	Left well on the 37th day.
8	9	Yip ngok fat	Kam kat ling	Child	6 years	July 17	Phosphate	1	3.5:25: 1.8 cm.	13	Suprapubic	Recovery	Left well on the 18th day.
9	25	Fong yam lung	Ho tin	Farmer	9 months	July 22	Uric acid	1	2.5:3.2: 1.3 cm	10	Median	Recovery	Left well on the 26th day.
10	55	Lai shin hing	Wong chung	Farmer	1½ year	July 29	Uric acid	1	4.7:3.3: 2.5 cm.	24	Suprapubic	Recovery	Left well on the 27th day.
11	21	Lo yung k'e	Tung hang	Farmer	3 years	Aug 5	Uric acid	1	3.0:3.0: 1.9 cm	14	Suprapubic	Recovery	Left well on the 25th day.
12	17	T'au kat hing	Tai ping	Business	10 years	Aug. 14	Uric acid	1	6:5.5: 5.5 cm.	97	Suprapubic	Recovery	Left well on the 40th day.
13	54	Chung yip tsai	Sin sha	Farmer	2 years	Aug. 19	Oxalate	1	5.3:3.8: 2.0 cm.	32	Suprapubic	Recovery	Left well on the 30th day.†
14	51	Yip tak chi	Shma kat ling	Farmer	6 months	Sept. 13	Oxalate	1	4.5:3.5: 2.1 cm.	24	Suprapubic	Recovery	Left well on the 26th day.

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* Dilatatio urethræ. † Wound not entirely closed.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1907.—Continued.

No	Age	Name	Residence	Occupation	Duration	Date of operation	Chemical composition	No. of stones	Diameter	Weight	Mode of operating	Result	Remarks
										Gramm			
15	7	Chung t'am miu	Ts'eng k'ai.	Child	2 years	Sept. 10	Oxalate	1	2.5:2.0: 1.5 cm.	7	Supra pubic	Recovery	Left well on the 22d day.
16	37	Un ying k'au.	Wan t'ong. .	Workman	3 years	Oct 16	Uric acid	1	7.0:5 0: 3.7 cm.	115	Median	Recovery	Left well on the 75th day.
17	64	Ng kam chau.	Shek chung.	Farmer	4 years	Oct. 21	Uric acid	1	5.4:4.3: 2.9 cm.	50	Supra-pubic	Recovery	Left well on the 61st day
18	59	Mak yong shan	San on.	Business	3 years	Oct 28	Uric acid	1	5 2:4.2: 2.6 cm.	41	Supra-pubic	Recovery	Left well on the 30th day.
19	8	Luk shu p'ui	T'ai peng	Child	2 years	Nov. 25	Uric acid	1	3.0:2.5: 1.8 cm.	11	Supra-pubic	Recovery	Left well on the 23d day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1908.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	No. of stones	hemical composition	Diameter	Weight	Mode of operating	Remarks
1	67	Leung ü yau....	Taiping..	Farmer	10 months	Feb. 29	1	Phosphate	4.5:3:2 cm.	16 gr.	Suprapubic	Left well on the 45th day.
2	39	Wong mau wan.	San on...	Farmer	13 months	March 13	1	Uric acid	5:4:2.5 cm.	33 gr.	Suprapubic	Left well on the 25th day.
3	25	Keung kat tsai....	San on. ..	Workman	15 months	April 14	1	Oxalate	5.5:4:3 cm.	46 gr.	Suprapubic	Left well on the 55th day.
4	45	Lai yung chi......	Wong chung .	Carpenter	2 years	April 14	1	Phosphate	4:3:2.5 cm.	41 gr.	Suprapubic	Left on the 35th day, wound not yet closed.
5	3	Ch'eug fung ts'z...	Fu mun......	Girl	6 months	April 23	1	Phosphate	Fragments	5 gr.	Dil. urethr.	Left well on the 7th day.
6	43	Mak ng kwai......	Hop shiu hau..	Farmer	10 years	April 24	1	Uric acid	4:2.5:1 cm.	12 gr.	Suprapubic	Left well on the 18th day.
7	55	Ch'an yin kei.. ..	Cheung kong ..	Woman	1 year	May 6	1	Uric acid	4:3.5:2 cm.	15 gr.	Dil. urethr.	Left well on the 7th day
8	42	Chan shu cheung..	San on	Farmer	7 months	May 17	1	Uric acid	3:2.5:1 cm.	8 gr.	Dil. urethr.	Left well on the 30th day.
9	23	Mak yun king.	San on...	Farmer	1 year	June 15	1	Uric acid	5.5:3.5:3 cm.	42 gr	Dil. urethr	On the 16th day the wound was closed; on the 17th day he had an attack of dilatation of the heart and died.
10	13	Ch'an pe tsai.. .	Tai tan...	Fisher	2 years	July 17	2	Phosphate	(4:3.5:3 cm. 4:3:2 cm.)	(40 gr. 30 gr.)	Dil. urethr	Left well on the 27th day.
11	61	Tsin wing chun.. .	Pan k'iu .	Farmer	10 months	Aug. 7	1	Phosphate	3:3:2 cm	17 gr	Median	Left well on the 17th day
12	42	Wong hong t'ai...	Siu heun. .	Workman	1 year	Aug. 12	1	Uric acid	4:3.5:2 cm.	26 gr.	Median	Left well on the 20th day
13	42	Lam no fuk ..	Fuk wing ..	Business	9 months	Aug. 19	1	Uric acid	3:3.5:2 cm.	15 gr.	Suprapubic	Left well on the 20th day
14	36	T'ang yun p'ui...	Mong ngau tang	Workman	9 months	Aug. 21	1	Uric acid	3:3 5:2 cm	15 gr.	Suprapubic	Left well on the 25th day.

Kuhne and Olpp, Tungkun. Tabular Statement of Lithotomies. 1908.—Continued.

No.	Age	Name	Residence	Occupation	Duration	Date of operation	No. of stones	Chemical composition	Diameter	Weight	Mode of operating	Remarks
15	10	Mak wai mun	Chan ka tsun	Schoolboy	6 months	Aug 24	1	Oxalate	2.2.2 cm	10 gr	Supra-pubic	Left well on the 30th day
16	34	Yeung kam tseung	Wong ts'un	Farmer	9 months	Aug 26	1	Uric acid	5 3·3 cm	26 gr.	Supra-pubic	Left well on the 44th day, after an attack of malaria and dysentery.
17	53	Un in kwong	Sin ts'un	Farmer	6 years	Sept 12	1	Oxalate	7·5.4 cm	126 gr	Supra-pubic	Left on the 32d day, wound not yet closed.
18	44	Hung chim shau	San on	Workman	6 months	Sept 23	1	Phosphate	5.5:4:2 cm.	34 gr.	Supra-pubic	Left well on the 19th day.
19	30	Wong u sung	Chu ham	Farmer	15 months	Sept 25	1	Uric acid	4 5:3:2 5 cm	19 gr.	Supra-pubic	Left well on the 33d day.
20	58	Leung pak in	Chiu lung kong	Business	1 year	Sept. 28	2	Phosphate	(4:2.5:2 5cm 4:2.5:2 5cm)	(20 gr 20 gr)	Supra-pubic	Died, after having an attack of melancholia.
21	54	Ch'an chi chun	Lai chau wai	Farmer	4 years	Oct 19	1	Uric acid	6 5:3 5 cm	85 gr	Supra-pubic	Died on the 5th, day from heart trouble.
22	36	Cheung kam fuk	Shan mun	Farmer	6 months	Dec 16	1	Phosphate	3 5·1 5 1 2 cm	6 gr	Median	Left well on the 17th day

Urethral Stone.—Urethral stone is frequent, and concretions along the urethra, especially in its prostatic portion and particularly behind partial stricture, are extremely common.

"One of the ultimate consequences of long-standing unrelieved organic stricture of the urethra," says Dr. Bucksen Brownto, "is atony of the bladder, and atony of the bladder not unfrequently leads to the formation of phosphatic vesical calculus." *J. C. Thomson, Macao.*

The passage of a few sounds, followed by two-way urethral irrigation, will usually dislodge such concretions. True urethral stone may be in the dilated prostatic portion and of considerable size; and small stones of the shape and size of a 10-grain quinine capsule may be found in the narrower portion, often quite close to the meatus, sometimes immediately behind a constricted meatus. The relief of the retaining stric ure will often cause their dislodgment, or they may be reached with appropriate forceps, crushed, and gently extracted after incision of the meatus. Under no circumstances should the urethra be opened from the skin surface, as the formation of urinary fistula, or false hypospadias is all too likely.

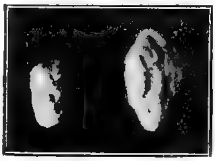

FIG. 276.—Anterior urethral calculi. (To size.) (*By J. ffferys.*)

Preputial Stone.—The only references we find to the subject are in Fowler's *Treatise on Surgery*, Vol. II, p. 257: "Preputial calculi may be present in the adhesions in the adherent prepuce, or between the adhesions and the glans." In the *International Encyclopædia of Surgery*, Vol. VI, p. 180: "Sub-preputial calculi are common in China. In Europe and America they are rare. Kerr, Canton, gives a record of fifteen personal cases; and on p. 181: "In size these calculi vary from a minute cluster of crystals up to concretions as large as an egg. In one of Kerr's cases they weighed 1 ounce 2 drachms."

"We also note a preputial calculus weighing 116 grains."—*Olpp, Tungkun.*

"*Phimosis and Preputial Calculi.*—The phimosis, which was almost complete, was congenital. The stones had been in process of formation, the patient thought, about three years. The operation under cocaine presented no difficulties and the patient recovered without any bad symptom. The stones, three in number, were fitted in like chestnuts in a burr. The one in the centre was flat and had two facets. The outside ones had one facet each. They weighed 1.5 gm. We have added them to our collection of curiosities in the Museum. Urinary calculi are rare in this part of the country. I have seen only one case of stone in the bladder since coming to China."—*Park, Soochow,* 1887.

The condition at home must be extremely rare, since the factors which lead to its development would result in prompt attention and cure. This is not the state in China, however, where phimosis of the most chronic variety is daily met with, and the operation for phimosis, next to rectal fistula, the commonest we are asked to perform. It is in these chronic, tight, cicatricial phimoses where the flow of urine is retarded, not in the urethra but actually in the prepuce, so that there is on urination a ballooning thereof with dribbling, or, at the most, a fine stream through a minute, pin-sized opening, that a cystic state of affairs is artificially produced, wherein the conditions necessary for the production of calculi are brought about.

The pathologic history is somewhat as follows.

A congenitally redundant prepuce with naturally small opening, and an eczema, ballanitis, chancroid, chancre, or other inflamed condition, produce, first, inflammatory contraction and cicatrisation of the meatus, (of the prepuce, not of the urethra), and the retention of mucus, blood-clots, epithelial detritus, uric acid crystals, or what not, to act as a focus for formation of stone.

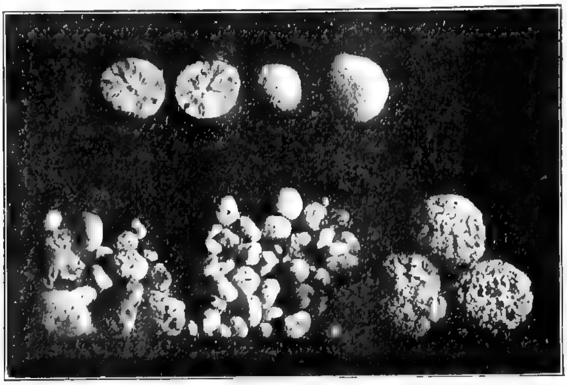

FIG. 277.—Above, preputial calculi. One is split to show structure. (To size.) Wt. is 3 gm. Below, one hundred and fifty-five preputial calculi, including three large ones, all from one case. (To size.) Wt. is three stones, 2 gm.; whole lot, 7 gm. (*By Jefferys.*)

At first it seems remarkable that the irritation of a stone does not produce a natural ulceration sufficient to allow of its own evacuation. But when we consider how rarely this happens in the bladder, even with the largest and roughest of mulberry growths, and how the tendency is rather to thicken and toughen the bladder than to weaken its walls, we can appreciate that in preputial calculus we have a condition which makes for thickening and toughening of the prepuce rather than for ulceration and sloughing. We have spoken of a large, double bladder-stone, the upper part of which was in the vesicle, the lower part in the prostatic urethra, which ultimately produced a deep urethral abscess and would have sloughed itself through the perineum had it not been removed by immediate operation. But this is the exception, not the rule. The very fact that the prepuce is ballooned at each act of urination, and the stone or stones caused to change position, is probably sufficient to account for their failure to cause excessive ulceration and sloughing. Occasionally, however, they are held very tight by contraction of the thickened walls, and possibly under these circumstances do sometimes cause perforation.

Symptoms.—The symptoms complained of by the patient are those of phimosis, with somewhat more pain and discomfort than one would expect from the external appearances. The prepuce is so thick that one is not always able to feel a single stone, though a roundish hardness may suggest the idea. When more than one stone is present, the crepitus between them is peculiar and quite characteristic—as one might imagine, of two or three small marbles in a thick woolen or felt pocket, or wrapped up in a piece of blanket. When many stones are present, and especially when there is sand or gravel as well, one is reminded of the pocketful of wet sand and pebbles of the old days by the seashore—a sort of boggy, gritty, grumbly feeling. A probe will invariably make the diagnosis certain, but must avoid the urethra to do so. A case of ours last winter gave up three creamy, smooth, rather soft stones, each of the size of a cherrystone, perfectly round and of a peculiar delicate structure—rather pretty after drying. And a recent case yielded, in all, three large stones and one hundred and fifty-two smaller ones, besides gravel and sand. These were irregular in shape and size, rough and soft in consistency, and, as might be expected, were worn by the constant motion and friction against their fellows. There were no sharp edges or flat sides in the whole collection. A case reported by Fearn from Soochow gave forty-five stones of varying sizes.

Operation.—Locate, if possible, the glans, cut down from above, clear out the pouch and circumcise. Usually some abrasions will be found which will heal at once and the final result will be eminently satisfactory to all concerned. We think it would be well to look invariably for associated vesical calculus, though we do not believe that there will be found any particular association.

CHAPTER XX.

SYPHILIS AND VENEREAL DISEASES.

Modern text-books have disqualified **syphilis** and declared it ineligible to membership in the choice company of venereal diseases. It is convenient, however, to include its discussion in this chapter, the object of which is by no means to serve up a general text-book on these subjects, but to outline the prevalence and special forms in China and the methods of treatment which will be found not only applicable but practicable.

That the Chinese, in common with all mankind, suffer from diseases of their genital organs goes without saying; and though every form of such disease known to the profession seems to present itself for treatment (and plentifully so) we think it is because of the external manifestation of these diseases that we become impressed with the exceeding prevalence thereof, rather than because they are actually proportionately rifer in China than in other places.

The Chinese suffer from syphilis and the **treponema pallidum**[1] is found in primary sores and secondary eruptions. Chancroids are plentiful and occasionally most destructive through virulence and through neglect, and when complicated by phimosis cause great loss of tissue at times. Gonorrhœa is abundant in all its manifestations, and the gonococcus Neisser its specific cause. These, combined with the non-venereal genito-urinary diseases, give more practice to the foreign physician in China than, perhaps, all other branches of surgery combined, and in certain localities tend to absorb the entire time and attention of the surgeon.

Syphilis rarely presents itself as **a primary lesion,** but possibly, through neglect of the sore, the scarring is apt to be deeper and therefore more readily traced than in home practice. It should be the invariable habit of a surgeon in China to look for such scars and the subsequent symptoms of syphilis in every case where the possibility of syphilis would bear any interesting relationship to the matter in hand. Where circumcision is not a racial practice, redundant prepuce common, and cleanliness rare, the ravages of even a chancre through its mixed infection and the disastrous ravages of sores of more virulent type may easily be imagined, so that a primary sore as the cause of an inflammatory phimosis may be looked for occasionally. The **secondaries** are usually noted by the patient, and occasionally treatment is asked for them. Cases of slight sore throat with fever and headache should invariably be searched for primary scar and history of infection. We have not been impressed with the severity or multiplicity of secondary manifestations of syphilis among the Chinese, though we must acknowledge that we count on the copper discolouration, which shows quite plainly, even on the yellow skin, as a guide in diagnosis, and on the scars of the gumma that is the common manifestation of syphilis as it presents itself for the foreigner's treatment.

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[1] Lee, Wusih; Taylor, Yangchow; Jefferys, Shanghai.

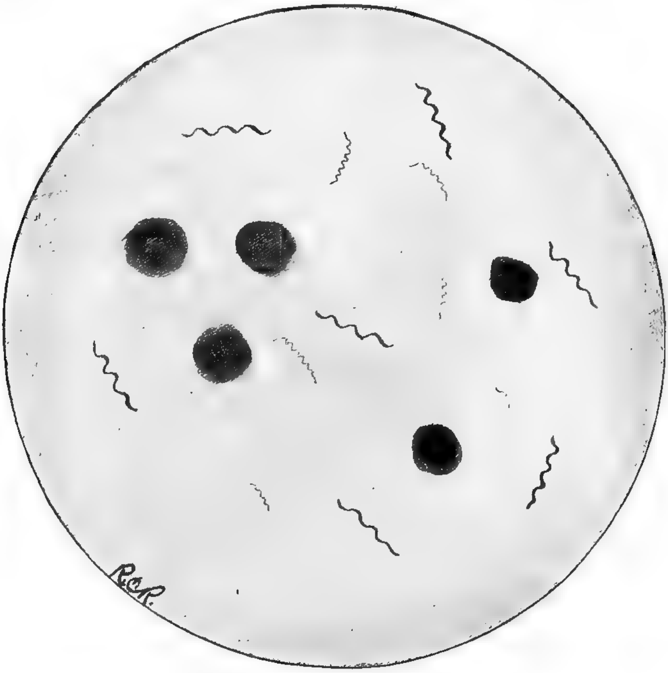

FIG. 278.—Spirochæte pallidæ and refringens. The darker ones are the refringens. (*From Pitfield's Bacteriology.*)

The impression that syphilis makes on us as we see it among the Chinese is due to the **prevalence of gumma** in every conceivable situation and of every conceivable degree of severity. Not only do we find it as a distinct lesion on its own hook, as we might say, but we find it complicating all sorts of other lesions. (A varicose ulcer will not heal, though its type be clearly manifest; give mixed treatment and it will melt away.) Looking back over years of practice we are impressed with the fact that syphilis is common among the Chinese and that it is, on the whole, mild in type—superficial—and usually responsive to rational and aggressive treatment. We can remember but one case, that with tertiary rupial manifestation and cachexia, which proved absolutely resistant through six months of varied and aggressive treatment and finally left, discouraged and unimproved.

With regard to the ravages of the disease upon the system as a whole, and aside from the destructive gross lesions thereof, we are inclined to agree with Hodge[1] of Hankow that, though prevalent, syphilis is not so inimical to the life of a nation as we have been accustomed to think. That it is not syphilis, but syphilis combined with alcoholism, and other poisons, that is responsible for fatal degrees of arterial sclerosis and extreme cirrhosis of internal organs. It is well known that the Chinese drink little alcohol, their rice wines being weak and not too attractive gustatorially; that rheumatism and gout are not so common as with us, and rheumatic fever almost non-existent. And chronic addictedness to opium is held by the majority of physicians to exhibit few pathologic lesions which can be demonstrated. Realising, therefore, that aneurism is not common and is usually associated with hard labour, or at least hard labour combined with syphilis; that cirrhosis, as of the liver, and arterial sclerosis resulting in paraplegias and so forth are infrequent, we may gather that, on the whole, the effect of syphilis upon the blood-vessels is not perhaps as disastrous as has been supposed. It is extremely

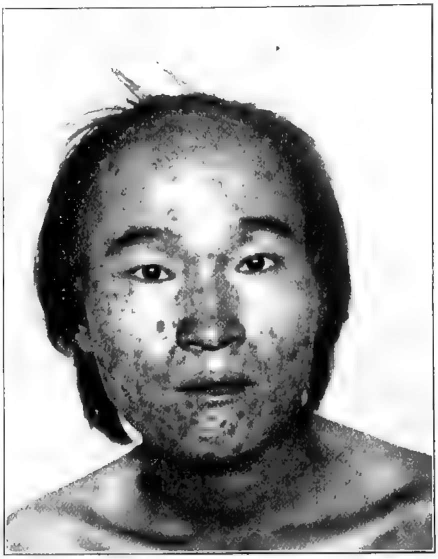

FIG. 279.—Secondary papular syphiloderm. (*By Jefferys.*)

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[1] *China Medical Journal*, September, 1907. Syphilis as seen in China.

rare to note such a thing as pipe-stem temporal vessels, and in those cases of aneurism on which we have done autopsies (see page 577, Chapter XX) the condition of the vessels was surprisingly healthy; and in not a single instance have we found calcified plates therein, or any gross degree of chronic inflammation.

We note here first the extreme rarity of aneurism in Southern China, while syphilis is particularly reported as prevalent in the southern provinces.

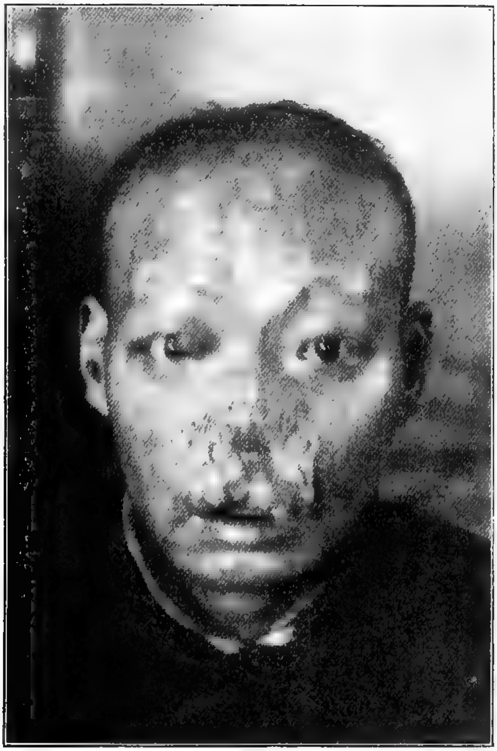

FIG. 280.—Healing gummata. (*By Jefferys.*)

Quoting from Stengel (*Pathology*, p. 404) "Aneurisms are always due to some weakness of the walls of the blood-vessel and to the distending force of the blood within. It is therefore most common to find the disease in persons beyond the age of forty or forty-five years, and particularly in those who have acquired arteriosclerosis. Among the remote causes, therefore, are the causes of arterial disease—syphilis, gout, alcoholism, lead-poisoning, and other chronic intoxications: * * * as contributing causes may be ranked all conditions which increase the blood pressure. Thus, laborious occupations, hypertrophy of the heart, and diseases which occasion constant excess of blood pressure, give rise to arterial degeneration and also to dilatation of the vessels in a purely mechanical way. Of all the causes, syphilis is most important."

In China we have, according to this excellent and undoubtedly true statement of the etiology of aneurism as found in America, the ideal conditions for the presence of aneurisms in abundance. *a*. Syphilis is exceedingly prevalent among all classes. The impression one gets is that almost one-half of one's patients are syphilitic. *b*. And laborious occupations play an enormous part in the economy of all China. Here men do the work which in other countries is done by beasts of burden and by machinery. Men carry the heavy freight. Men till the ground largely by hand. Men pull the carts and the carriages, men do the running, the lifting, and the hauling. Men row the thousands of junks against the current, etc., etc. Truly the chief, far and near, causes of aneurism are all but omnipresent in China, and yet we are inclined to agree with Hodge, in believing that aneurism is comparatively rare in this country. Let us quote here just what he does say about the matter, and he is probably our best informed man on this subject.

According to his observations in Hankow, "If we may judge from the rarity of aneurism among the Chinese, either syphilitic endarteritis is not common or it plays a less important part in the etiology of that affection than the text-books would have us believe." "I have long believed that the most potent factor is intermittent strain, but I think severe specific arteritis may not be as common out here as one might suppose. Of course this is one of the questions where the inability to examine one's patients *post mortem* causes one to speak with great hesitancy. I have said severe syphilitic arteritis, meaning by that of such a degree as to produce symptoms; although I have seen hemiplegia due to this cause it is not in my experience so common, as, with syphilis so widespread, one would have expected it to be."

In Shanghai, too, syphilis is prevalent, extremely common in every stage and in the most exaggerated untreated forms, though its commonest tertiary manifestation is unquestionably gumma. Here too endarteritis is inconspicuous, and atheroma is certainly rarely seen, even in mild degrees. We have treated two cases of hemiplegia in the past five years, but in neither of these was atheroma evident, and the subjects were both old men of the labouring class and without other indication of arterial degeneration than the cerebral hæmorrhage.

A short series of rather interesting aneurisms, extending over some five or six years in time, has prompted us to put them on record in connection with this question raised by Hodge. They are too few to afford more than contributory evidence toward the ultimate solution, but they have the advantage, denied to Hodge, that we have seen some of them, as it were, *post mortem;* that is, we have seen the insides of nearly all and have several of the specimens in our museum. First we will briefly outline each case.

CASE A.—Sampan-man, age fifty, has seen hard service, no specific history obtained. Aneurism the size of a small fist at the bifurcation of the right common carotid. Pulsates markedly and is very tense. Has developed slowly. Patient having had an arm previously amputated, in St. Luke's Hospital, for traumatism, ready "to have his head cut off if thought best." These were his own words. The voice is husky.

Operation. –Ligated the common carotid "below." One small stitch abscess. He staid in bed one week, then insisted on leaving. Saw the patient three months later while treating a member of his family. The tumour was about half the original size, softer and pulsated very gently. No pain or discomfort and appeared doing well.

CASE B.—Ma-foo (coachman), about sixty years old. Feeble and plethoric. No specific history obtained. Has small tumour, pulsating; projecting an inch above the right clavicle. Diagnosis, innominate aneurism. Carotid and subclavian probably slightly involved. Urged operation, but was refused unless a guarantee of cure were given. Heard of the death of the patient within three months. At the time the patient was seen there was some slight respiratory distress.

CASE C.—Clerk. Age about thirty. Marked dyspnœa, great anæmia, and exhaustion. No specific history obtained. A pulsating tumour the size of three fists above and extending beneath the left clavicle. Diagnosis aneurism of the left common carotid. There was a hole in the aneurism the size of a twenty-cent piece, and this was plugged by an organized clot which slipped in and out with each cardiac pulsation, while a few drops of blood oozed around its edges from time to time. Patient said that the tumour had grown until the skin over it was very thin, and that the day before a native doctor had run a needle into it at the most prominent point. There took place at once a furious hæmorrhage, from which he nearly died and would have done so had the clot not plugged the hole of its own occord.

Permission to operate was not obtained until the next morning, meanwhile the patient was kept quiet and aconite administered.

Operation.—We had under consideration the expediency of cutting down through the aneurism and trying to plug the carotid with the finger and then remove the whole growth at leisure, but the shape of the tumour was fusiform, and it extended so far beneath the clavicle that we were afraid the lower entrance of the carotid would be too large to render this procedure successful. What we did, therefore, was to attempt to reach the carotid from the outer side and under the bone. To do this it was necessary to disarticulate the clavicle from the sternum. There were two accidents during the operation. In tracing down the vessel, it was necessary to raise the tumour gently, and in doing so the clot became dislodged. There was some blood lost here, but by promptly grasping the opening in the aneurism with a powerful clamp, we were really better off than before and the patient's condition was not yet that of collapse. We then worked very rapidly and succeeded in getting an aneurism needle nicely around the carotid just at its origin when there was a sucking sound and a few bubbles of air entered the external jugular vein which in our hurry we had cut and not stopped to clamp, there being no bleeding from it, and the patient died of air embolism.

The aneurism proved to be sacculated, and showed a small opening in the side of the carotid from which the large tumour arose. The sac is lined with a smooth intima for some inches about the point of origin and the vessel is apparently in good condition. No evidence of disease.

This patient was possibly syphilitic, though there were no active lesions and the history was indefinitely negative. No history of strain.

Case D.—Li Tsing-wo, farmer. Age fifty-five years. Large fusiform aneurism of the popliteal artery. Patient in a critical condition, and aneurism threatening to burst. Refused amputation, but consented to anything else.

Operation.—Incised, turned out the clots, tied the popliteal immediately above and two vessels of exit, took away the whole sac and packed against the bone. Little hope was entertained from the collateral circulation; the heat of the leg was not maintained and gangrene set in. Patient still refusing amputation, left the wards.

There was no history of syphilis, but the farmer in China leads a very hard life, and this one showed plenty of wear and tear.

Case E.—Carpenter. Age about fifty. Three weeks before patient sprained the knee-joint while walking. (This might have been the rupture of a small aneurism or more likely the injury to the vessel, popliteal.) Two or three days later he noticed a decided swelling in the popliteal space, with some pain. Suspecting that "it was caused by the poisoned dart of the evil one," he applied to a sorcerer for treatment. The sorcerer gave him a round dozen punctures in the bend of the knee with a long "needle." There was considerable hæmorrhage from this treatment, but, "in spite of this," the swelling remained as large as ever. (Naturally so.) He then consulted a native physician, who made external applications and gave internal treatment, with no benefit. The swelling extended up the inner side of the thigh. Yesterday the native physician himself resorted to needle punctures. As a result of these, patient was brought to the clinic.

At present the patient is shocked. Locally there is a large boggy tumour in the popliteal space and up the line of the femoral artery to the middle of the thigh. The whole leg is boggy and cold. There is little or no pulsation over the tumour.

Operation.—Amputation was performed. The history is partly missing, but we believe this patient died within a couple of days.

Pathology.—The aneurism is low down near the bifurcation. Little is left of the original sac, which may have been fusiform. The bone is bared and ulcerated. The vessels above and below are normal in size, smooth and healthy looking.

Case F.—Zung Ah-hai. Age twenty-six. Club-boy by profession. Long hours and constantly on his feet. Delicate looking. Smokes opium. Gives a doubtful specific history. Parents were healthy, but patient gives history of gonorrhœa and eruption six years previously. Three weeks previously felt a lump in his popliteal space. Right leg. Grew tighter and tighter every day until the circulation in the lower leg was almost shut off. Leg is now cold and œdematous. Marked swelling and pain back of the knee-joint.

Present trouble has been treated by a native doctor; externally by applications and internally by medicine.

Aneurism diagnosed.

Operation.—Leg amputated in the lower third of the thigh.

Pathology.—Large and extensive dissecting of the tissues and ulceration of the femur. The aneurism is high in the space, and some 2 inches of the sac remain posteriorly. The vessels above and below are healthy and show no signs of diminution of ca'ibre or of endarteritis.

Case G. Occupation unrecorded. I believe he was a tailor, but do not remember surely. Was distinctly syphilitic. About twenty-two years old. For some weeks had noticed a pulsating tumour in the upper part of Scarpa's triangle of the left leg.

Diagnosis, probably aneurism, possibly a gumma or sarcoma over the femoral vessels.

Operation.—As the tumour extended under Poupart's ligament, the external iliac artery was ligated in the place of election, or a bit above it. Pulsation stopped at once and the tumor subsided. The circulation in the foot was promptly reestablished and no pain or other ill effects were manifested. There was a slight desquamation of skin during the second week. Patient left after three weeks in bed, well satisfied. Specific treatment was administered while he was in the wards.

CASE H.—Wong Ming-foo, fortune-teller. Age fifty-three. Thirty years ago had a sore on the penis, lasting for two weeks. No other history of syphilis.

Has now a large pulsating tumour on the right side of the chest in the region of the mammary gland. It extends to the clavicle almost and up under the pectoralis major into the anterior axilla. Here the pulsation is especially marked, but the whole huge mass expands with the pulse and is under terrible tension. One almost hesitates to touch it, lest it burst. Patient complains of pain, but has no dyspnœa, and speaks clearly. He says that in the sixth month of last year (about a year ago) he felt pain about 2 inches above and to the inner side of the right nipple. Pain was "severer in damp weather and excruciating in the twelfth moon." Then a mass the size of a dollar appeared at this spot. It "did not come from within the chest" (he said this). He "could pick it up in his fingers." It was not very hard and was slightly movable. The tumour increased in size and hardness very rapidly. At present the aneurism measures 6 inches in diameter and 4 inches high from the chest wall. It extends from the first rib to the seventh and from the sternum to the midaxillary line. When he lies down he coughs violently. He is an opium smoker.

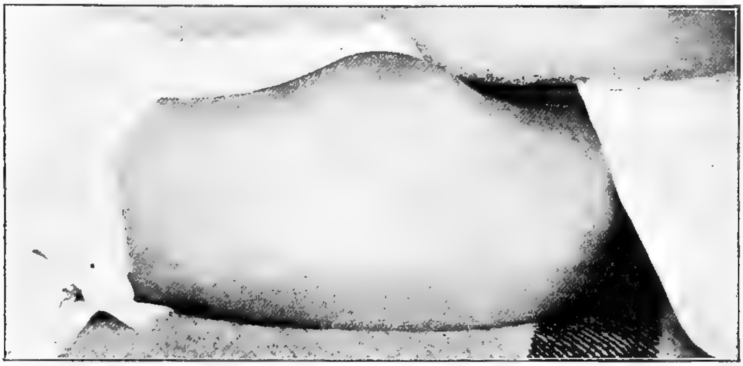

FIG. 281.—High femoral aneurism, before ligation. (*By Jefferys.*)

Operation.—A perforated needle was inserted low down in the tumour, away from the most marked pulsation; about a pint of blood flowed, while 15 feet of sterile silver wire was inserted. The puncture hole was closed with a needle, on which a figure of eight was wound. No anæsthetic was used.

Patient felt much relieved for two days, probably through lessened tension in the blood current. Two days later pain was worse and became excruciating.

Second operation. In spite of the history the marked pulsation in the region of the axilla induced us to resort to an exploration of the subclavian in order to see if by any remote chance the axillary artery might have relation to the tumour. The reasons for this were gone over with two colleagues and seemed sufficient to warrant the exploration, considering the desperate nature of the case and the expectation of immediate death. A little chloroform was administered in the semisitting posture and the third portion of the subclavian sought for. Strange to say, it could not be readily found. Probably it was shoved backward out of the field. The first portion was then easily exposed, but was quite soft and compressible. The innominate was also investigated. It lay higher than normal, and this was taken as a final proof of the aortic origin of the aneurism.

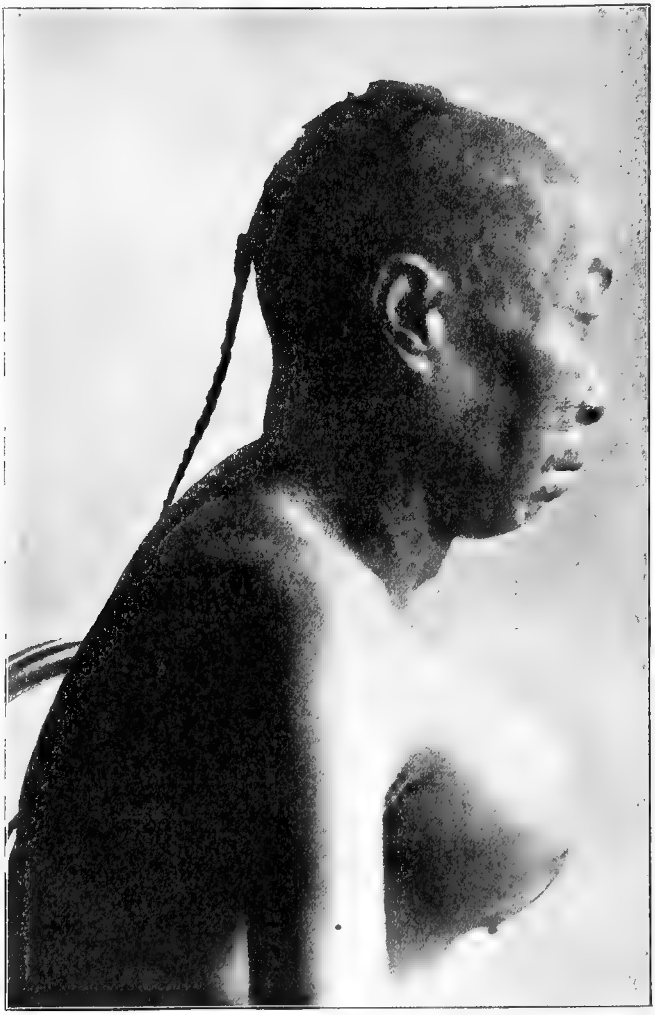

FIG. 282. Large aneurism from the ascending aorta. (*By Jefferys.*)

The patient died without rupture of the aneurism, of exhaustion, some hours later.

Pathology.—The aneurism was opened and explored. There was a huge sac, mostly outside of the chest wall. The fourth rib was eaten away for 2 inches, the third had a bite taken out of it, and the fifth was pushed downward. The opening was 2 inches round. The inner sac communicated with the aorta by a smooth, neat hole, the size of a large thumb-nail. The aorta was smooth and soft and normal in size. The opening was anterior and up, where the ascending aorta becomes transverse.

The sacs were lined with a thin tough clot 1/4 inch thick and the silver wire was nicely coiled, partly in and partly out of the chest wall. There was a small fresh clot in its meshes, but only a promise of future usefulness (?). The axillary pulsation was due to extensive recent dissections in that quarter.

SUMMARY.

Case	Seat of aneurism	Age	Specific history	Condition of vessels	Atheroma	Occupation	Remarks
A	Common carotid.	50	Negative ...	Fairly good.	Absent (?)	Hard labor and exposure. Sampan-man.	
B	Innominate	60	Negative ...	Fairly good.	Absent (?)	Hard labor and exposure. Ma-fu.	
C.	Common carotid.	30	Negative (?)	Good......	Absent...	Clerk................	Opium smoker
D.	Popliteal	55	Negative ...	No record	Absent...	Hard labor. Farmer.	
E	Popliteal .	55	Negative ...	Good......	Absent...	Hard labor. Carpenter.	Slight traumatism.
F.	Popliteal .	26	Positive	Good	Absent...	Moderate labor, constantly on his feet. Club-boy.	
G.	Femoral	22	Secondary syph.	(?)	Absent. .	Tailor. Long hours ...	
H	Aorta	53	Positive (?).	Good	Absent...	Fairly easy. Fortune-teller.	Opium smoker.

There are a number of ways in which syphilis may involve the blood-vessels. First, arteriosclerosis, either diffuse or circumscribed; second, hyperplasia of the intima and obliteration of the lumen by "syphilitic infiltration and induration of adjoining gummata" (Stengel). The adventitia may likewise be affected. But "there is no histologic or macroscopic feature by which the syphilitic nature of the disease can be positively asserted" (Stengel).

Of the eight cases here reported not one showed atheroma, not even the aortic aneurism. Furthermore, so far as the specimens show, and in the amputations a large arterial surface could be examined, none of these cases show other than healthy vessels of normal lumen.

The evidence, in so far as these few cases have any value (and they are merely laid on the general pile), the evidence then is against syphilis as playing an important part in the etiology of most of these aneurisms. Case G. may easily have been of syphilitic origin, either a gumma over-lying a femoral aneurism or an ulceration involving its coats. There is no way of deciding, since the patient recovered. The same may be said of case F., though the specimen shows nothing. Case B. had a healthy-looking aorta, except for the aneurism, and the surrounding vessels seemed in good condition.

Four cases may be directly attributed to hard labor. All these patients were old men. Ages fifty, sixty, fifty-five and fifty-five.

Two cases had doubtful syphilis with easier labor. Ages thirty and fifty-three.

Two cases had positive syphilis with moderate labor. Both young men. Ages twenty-six and twenty-two.

Before closing these remarks we should like to add an impression, namely, that it is a fallacy to suppose that the induction of a clot is anything but a totally incompetent and ineffectual cure for aneurism. Even in those few cases where a degree of success in inducing a clot seems to have been attained there is no real cure or even temporary safety attained so long as the pressure of the circulation maintains. Take one illustration, and the literature of aneurisms offers much corroboration. Here in Case H. we have almost a record aortic aneurism, as far as size and pressure goes, and practically no clotting, and yet the patient died, without rupture, of exhaustion, for which his opium smoking was largely responsible. (It took grain doses of *morphine* to affect him at all). And yet again, in our museum, are two specimens of aortic aneurism in non-Chinese (with some atheroma), in which the most compact clots thoroughly filled each cavity without any apparent delay in respect to a fatal issue. We have a very poor opinion of the clot prospect in the cure of aneurism, and would, pending the working out of Mata's promising "lumen restoration" idea, in which some good work is now being done, depend on ligation or rest and a quiet life, combined with general measures for health, and particular measures to meet specific and diathetic indications, and, especially, rheumatism and syphilis.

"I have now in the hospital ward another case of diffuse popliteal (?) aneurism, extending from apex of Scarpa's triangle to within 5 inches of heel. The history pointed to a rupture of the artery forty days before he came to the hospital and his leg was in a terrible condition; in fact he seemed to be dying. On the inner aspect of the calf was a large livid spot 2 1 2 by 3 inches, which he said had developed within four or five days, and which next day began to separate in the form of a slough, leaving a punched-out ulcer, extending to, but not involving, the muscles. Owing to the late date of observation, I simply mention this case as being at least suggestive (of syphilis, Authors)." *R. B. Ewan, Chentu.*

"*a.* Ruptured femoral aneurism with no pulsation. All the cardinal signs of inflammation were present, and the history was not suggestive of aneurism. Temp. 99 101. Diagnosed as an abscess; but a small incision showed the mistake. The case was successfully treated by ligature of artery in Scarpa's triangle.

"*b.* Aneurismal varix involving external iliac and femoral arteries and the internal saphena vein with its tributaries; quite inseparable."—*Report, London Mission Men's Hospital, Hankow.*

"**Aneurism of the Heart.**—Two examples of this interesting and comparatively rare pathological condition were met with during the year. Both cases occurred in Chinese males over forty years of age. **In one instance marked evidences of syphilis were present throughout the body.** Death in each case was sudden, the aneurisms bursting into the pericardial sac. Both dilatations were saccular in form, and had approximately been about the size of an orange. The aneurisms involved the entire walls of the heart, one being situated at the apex of the organ, the other involving the anterior wall of the left ventricle near the apex. The orifices communicating with the cavity of the ventricle were large, notwithstanding the saccular nature of the lesions. The walls of both sacs were much thickened owing to the deposition of a large amount of fibrin which had been laid down over the inner surface in the lamellar form."—*Public Mortuary, Hongkong,* 1905.

"**Heart Disease (Valvular).**—Twenty-five cases were under treatment of which ten were Chinese, six Indians, and nine Europeans. The ordinary causes which obtain at home, rheumatic fever and the exanthemata, being out of the question here one falls back on one of other causes, viz., syphilis, which I suppose must be credited with giving rise to the bulk of valvular mischief in Chinese. We had one case of malignant endocarditis in a European in which the patient died suddenly of cerebral embolism. Post-mortem the mitral valve was found extensively affected and a smear taken from this resembled a pure culture of pneumococcus."—*Hongkong Health Report,* 1909.

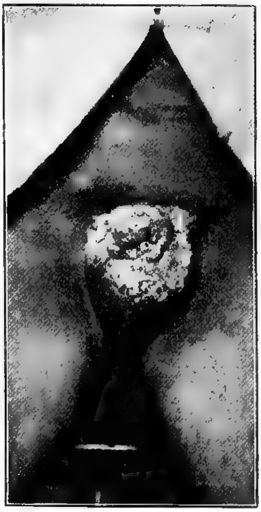

FIG. 283.—Ulceration of the genitalia. A common form, usually syphilitic, but not always so. (*By H. B. Taylor, Anking.*)

Hodge calls attention to the prevalence of **phagadenic ulceration,** and attributes it to the effect of syphilis upon tissues of low vitality. And, indeed, we must expect that where food is often insufficient, tuberculosis rife, and, in the better classes, exercise almost unknown, such tissues will readily succumb to any morbid process or infection.

"**Syphilitic Gangrene.**—That syphilis is a fruitful source **of arterial disease** with its far-reaching and varied train of evils has long been recognized, but that it may be, and not infrequently is, a direct factor in **producing gangrene** of the integument and extremities, seems to have received but slight attention judging from the spaces devoted to it in even such standard works as Allbutt's System of Medicine, Erichsen's Art of Surgery, and Cheyne and Burghard's Manual of Surgery. The only account I have been able to find is in Taylor's Venereal Diseases, 1895, Vol. II, page 744, who devotes less than two pages to Gangrene and Gangrenous Ulcers. From this short article I make the following quotations:

"'In some cases of syphilis, as a result of changes in the coats of arteries and veins, gangrene is produced, by which portions of the integument and extremities are destroyed. Until within recent years all ulcerations occurring in syphilitic subjects were regarded as evidence of the breaking down of syphilitic infiltrations. To-day we clearly recognize the fact that spontaneous gangrene of the skin and its resulting ulcers may be due to syphilitic arteritis or to endarteritis obliterans.'

"CASE.—It was reported to me that a beggar was going round the streets with a pair of 'black legs and feet like a Chinamen's dress boots,' and a few days later he appeared at the hospital gate. He was suffering from symmetrical gangrene of feet and legs. The line of demarcation had formed slightly above the junction of the lower and middle third of each leg, and the bones at this point were quite bare for nearly an inch. The tissues were shrivelled, blackish, and almost dry, except in vicinity of line of separation.

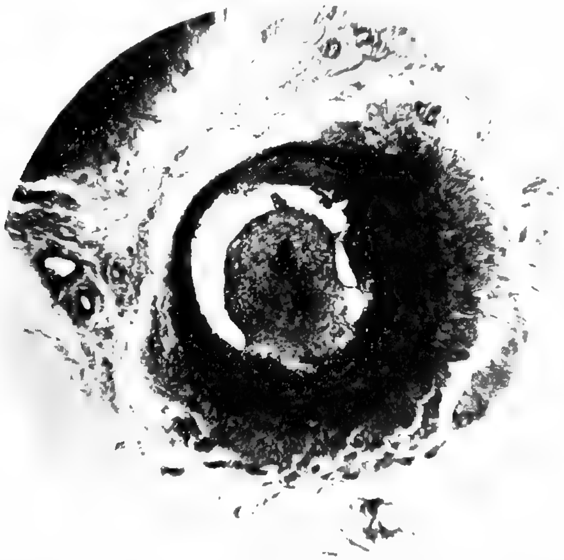

FIG. 284. Endarteritis obliterans. (Leitz No. 3.) (*By Bell and Sutton, Hongkong.*)

"The condition came on suddenly, following convalescence from an attack of fever. He had been exposed to cold while soldiering, but the possible effect of frost was excluded by the fact that he was in Szechuan several months before he was taken ill. Both legs were amputated just below the point of election, and the tissues, including the arteries, especially of one leg, were found friable and apparently of low vitality. He made a good recovery and *grew fat* on free anti syphilitic treatment. (*Other cases are not quoted here.*)

"1. With one exception the patients were young men, and were not, so far as could be detected, suffering from general atheroma.

"2. In each case there was reasonable proof of syphilitic taint.

"3. In each case the rupture or occlusion came on suddenly, and if this occurring in the brain points to syphilis, as is claimed by some authorities, may not the same hold good for other parts of the body?

"4. No apparent or sufficient cause. This applies specially to Cases I and III.

"5 The eschars in their development, color, separation, and the resulting ulcers, closely resembled the description given by the author quoted

"6. The therapeutic test" *R. B. Ewan, Chentu.*

Nervous affections of syphilitic origin appear to be uncommon. Locomotor ataxia is very rare. Myelitis is found, but is there any connection between that and syphilis? Certainly none established as yet. These findings accord with those of other dark skinned races in which syphilis tends to superficial manifestations.

Hodge closes his paper with **"two words"**:

> "1. The impossibility of getting reliable histories is very much against us in diagnosis and frequently causes us to lose the one important clue to our case.
>
> "2. The knowledge of the widespread influences of syphilis may make us very slipshod in our diagnosis. 'When in doubt give iodide,' is a dictum to be used with the greatest caution, and I have seen many a man's clinical acumen dulled by a lavish and unintelligent and non-painstaking use of specific remedies."

To the first, we would say, yes, but look for the scar of the primary sore, for the spotty eruption of secondary syphilis, for the old characteristic stellate gumma scars on the shins, on the back, on the scalp; note the patient's tone, which in syphilis is quite as characteristic as is that of the opium habitué; the condition of the mouth, of the rectum, and of the mucous membranes in general; and, if one is careful, there are few cases of syphilis that do not leave their foot prints on the fair skin, or the yellow skin, of their hosts.

With regard to the second, we have spoken at length in the first paper we ever wrote for the *China Medical Journal*, eleven years ago (1900) and we have had no cause for changing our opinion since that time; though it is true that the guesses of some men are more accurate than the careful diagnoses of others, a guess pure and simple is never compatible with the scientific practice of medicine. However, guesses without reason should not be confused with the true instinct of the careful and faithful diagnostician—the intuition which comes from years of observation and adds brilliancy to the humdrum of detailed diagnoses. Nor is it fair to exclude the therapeutic test of a brain tumour, for example, with iodides, because it is of the nature of a guess. There are certain cases of syphilis which are only diagnosed by exclusion, and it may be allowable for a conscientious man to say, this neither being tuberculosis, nor leprosy, nor yaws, nor what not, it must therefore be syphilis. We will therefore treat the patient for syphilis. But having said this much, we have, with Hodge, nothing but contempt for the indolence of the man who prescribes iodide on the one-in-three chance that a lesion is syphilitic.

The origin of syphilis in China is **largely venereal.** In any land where prostitution is rife such must be the case, and it is through prostitution that syphilis is spread in China as elsewhere. Nevertheless, we think it likely that syphilis innocentium is far more prevalent in China than among our own people. In the first place, the Chinese have little conception of contagion by contact. It is a common thing to see mothers scoop off the tubercular sputum from the lips of their offspring or wipe off pus with their pocket-handkerchief and then wipe their own eyes. Trachoma spreads like wildfire. The Chinese live in a chronic state of crowding, and though the houses are well ventilated by day, by night they are veritable cauldrons of sweat and stink. The family towel, the family commode, increase the chances of non-venereal propagation of venereal diseases. We have recently noted a case of such in a baby, contracted from a wet-nurse carelessly chosen, and the infection passed on to the mother of the child, whose milk supply was used for part nursing. If this can happen under foreign supervision, we can readily imagine to what greater extent may such occurrences take place in native houses.

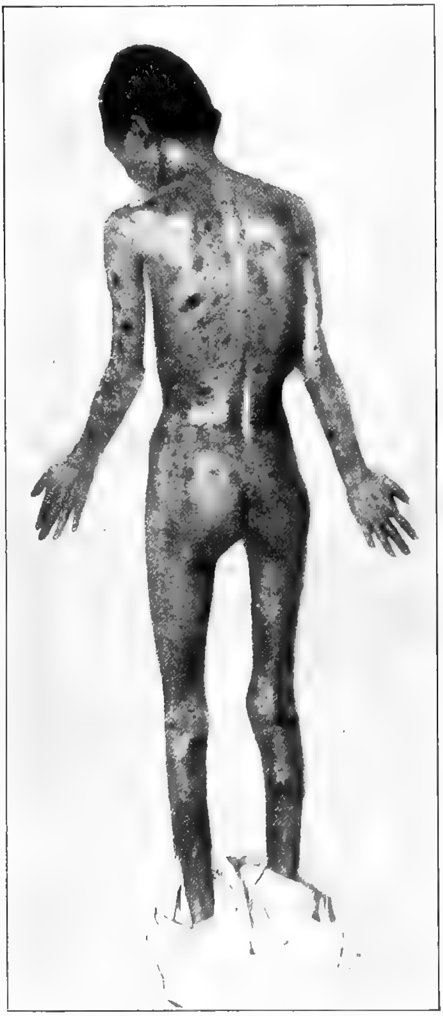

FIG. 285. Late secondary syphilis. (*By Jefferys.*)

Gonorrhœal ophthalmia is exceedingly frequent and the number of cases of syphilis in which no penile scar, and an absolute denial of venereal origin, where denial served no purpose, leads us to believe that innocent infection is extremely common. However, as we have said, prostitution is rife — Shanghai is claimed to have between ten and twenty thousand Chinese prostitutes, and the figures are probably not exaggerated. They may be seen serving their trade at all hours of the day and night and striking their bargains from ten cents upward. It is a ghastly picture and rendered even more so by noting in dispensary practice the common presence of triple venereal infection in women of this profession. We remember a young woman who for five years lived in a house of prostitution directly across the street from St. Luke's and, to our certain knowledge, for those five years had repeated manifestations of syphilis of the most infectious type. She also had gonorrhœa and very destructive chancroids. Last winter she presented herself, having at last become too sick for work, a mass of crusted rupial sores, and only two weeks ago we saw her carried off in a pine box, and thanked heaven that she was dead.

In our own practice we have seen very little **hereditary syphilis**; but this experience is not by any means universal among practitioners.[1] Hodge, of Hankow,[2] says that there is less than at home and explains it, first, that the conditions of life out here favour the operation of the law of the survival of the fittest; by which he means that the weakly sufferers from hereditary syphilis die because of their weakness and lack of efficient treatment; second, that such as remain are fairly strong, "the selected," and these may show few signs of their early taint. As Hutchinson points out, "Many of these have excellent health in later life, and in most it is impossible to recognise that they have ever suffered from the disease in early life." Hodge also points out the danger of confusing certain forms of inherited mischief with tubercle, and believes that the fact that China shows a particularly large percentage of puny men may be explained on the ground of hereditary syphilis.

We do not remember ever to have seen typical **Hutchinson's teeth.** If hydrocephalus is an indication of cerebral syphilis of the newly born, it is common enough; but we know nothing definite of its true pathology.

We have spoken of the fact that **gumma** is the prominent lesion of syphilis in China. This is merely in keeping with the more general statement that in the practice of medicine in China we meet with an average of far more exaggerated lesions than at home. So much is late and big. Gummata of the shins and scalp are perhaps the commonest lesions we meet with. These are apt to be small and multiple, and when neglected, to attack the bone; and they are associated in our mind with the general condition of cachexia. Syphilitic leg ulcers—really broken down gummata—make up a large proportion of this common dispensary lesion; and we should emphasize the importance of acquainting oneself thoroughly with the characterisation of leg ulcers of various types, so that one can feel positive of one's ability to differentiate the gummatous, the tubercular, and the varicose ulcers from the simple traumatic ulcer, as failure to do so will waste much valuable time.

Another common type is the **destructive ulceration** of the vomer and nasal bones, with collapse of the nose or complete destructive erosion thereof. Cicatricial contraction of the mouth is frequently met with and should not be operated upon until such time as the patient is thoroughly under specific treatment. An interesting patient of ours barely succeeded in keeping his face open by anchoring a small silver tube before the nose was able to close completely and finally. We taught him to feed himself through a tube until he was well under specific treatment, and then made a mouth for him which had very practical if not æsthetic characteristics.

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[1] Hongkong Health Reports, 1905: eighty-one cases congenital syphilis.

[2] *China Medical Journal,* October, 1904.

Syphilis of the Nose and Mouth.—Patient came in with nose occluded, except for a small hole in which he wore a tiny silver tube of his own devising. The mouth was much contracted and very much ulcerated, as shown in the photo taken at this time. Mixed treatment was instituted and all active ulceration disappeared, but the contraction of the mouth progressed till only liquid food could be taken, and that through a tube. Patient refused operation and disappeared for a season. Finally he was driven by further contractions to return and submit to operation on the mouth. There was by this time a return of the ulceration, but as the patient was almost starving we had to operate, in spite of the unfavorable prospect. A large opening, which never deserved the name of mouth, was made; but although mixed treatment was pushed to the utmost, the ulcerative process got in its bad work and left the patient aught but a thing of beauty. Operation on the nose was flatly refused, and the patient was

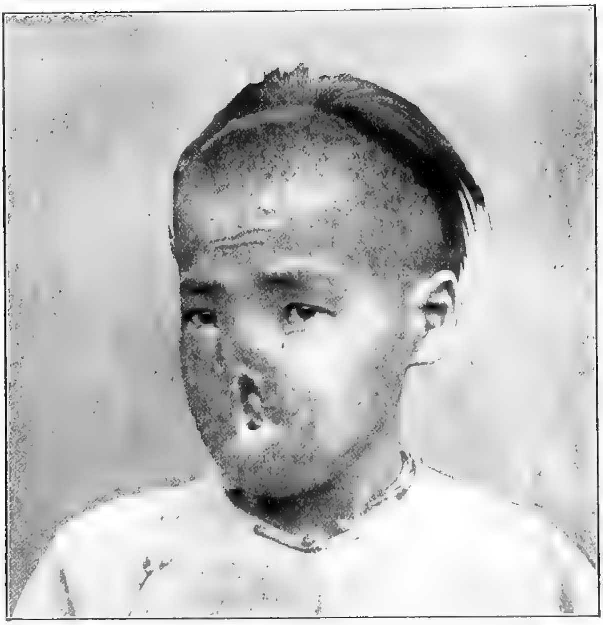

FIG. 287.—Syphilitic contraction of nostrils and lips. (*By J. E. Butchart, Luchoufu.*)

apparently delighted with the result and expressed not the slightest concern for his lost beauty, being entirely satisfied with the fact that he could eat a square meal and return to his business. We believe that we have never yet met a human being who placed money getting more supremely above every other worldly consideration than did this human plutophile.

Bone syphilis has presented itself to us chiefly as syphilis of the jaw, upper or lower—more frequently the upper. The condition is a foul and nauseating one. There seems to be great difficulty in the necrotic jaw sloughing itself loose, and quantities of the foulest pus run continually from the surface. The patients are cachectic and much debilitated, and we have lost more than one from inspiration pneumonia developing after operation. It is usually easy to remove the loose dead bone, and healing, under proper treatment, is prompt and satisfactory, provided the patient can tide over the first post-operative days. Necrosis of the skull is also fairly common.

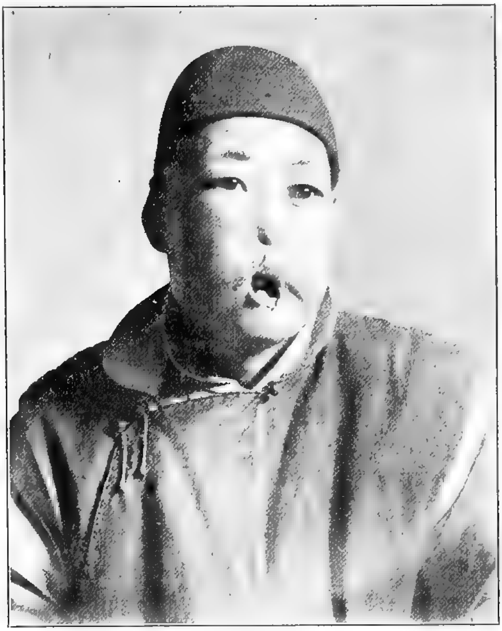

FIG. 288.—Syphilitic contraction of nostrils and lips. (*By Jefferys.*)

Treatment.—The Chinese patient readily responds to treatment for syphilis, but there are certain points in which **special consideration** must be given him.

In the first place, it may be taken not only as a prejudice, but as a fact that the Chinese people believe, are convinced, that foreign medicines are too strong for them—which we take it is an indication that it has been too general to stuff them with large doses and with unpalatable mixtures; The former is an attempt to get in as much as possible in the short time the average patient allows us; the latter is a more or less natural vein of hospital economy both of time and money. It should be remembered that the Chinese patient is, on the average, smaller than his foreign cousin; that he is not accustomed to our villainous, vile-tasting compound prescriptions, and that he is a free agent who will not hesitate to pour the precious mixture as a libation to his gods and use the bottle to keep his cooking oil in.

We are persuaded that in the administration of mercury and potassium iodide the **less that is given by the stomach and the more that is given by other channels, the better.** Our colleague H. W. Boone has used mercury and chalk (grey powder) as the cornerstone of his hospital practice in secondary syphilis for many years, in the dose of 1 grain t. i. d. Our own preference over grey powder is for the protiodide of mercury, as having less effect upon the bowels and being more easily digested. But to expect a Chinese patient to allow one to administer mercury over a period of many months, let alone several years, is a vain delusion. Our own routine method of treating syphilis with mercury was drawn from the recommendations of a United States Navy surgeon, Olsen, and is as follows:

In order to attain any degree of success in the treatment of syphilis in China: and the proportion of our patients in which syphilis enters, at least as an important factor, is enormous (some think as high as 50 or more per cent.): the **following conditions** for treatment should be **aimed at:**

1. To use the short time the Chinese patients will allow us to produce the maximum effect on the disease.
2. To inconvenience the patient (who is often able to attend to his business if permitted) as little as possible.
3. To avoid disgusting the patient by remedies "too strong" for his stomach. (Mercury, for instance.)
4. To keep from filling up our wards with infectious patients who can just as well as not be treated outside.

We believe that the intramuscular injection treatment, using *salicylate of mercury*, will meet these conditions as nothing else will, and is applicable throughout the secondaries and mild tertiaries; in other words, it fits practically all ambulatory syphilis, subject to exceptions which on trial will be found so few as to serve only to prove its worth. So firmly are we persuaded that this is the **treatment par excellence** for routine use in Chinese hospitals that we have asked Olsen, of the U. S. S. Galveston, to outline his method of application, which is here quoted in full:

Materials Required.—1. Hypodermic syringe. Two-inch rather strong needle. 2. Salicylate of mercury. 3. Liquid albolene. (Liquid petrolatum.)

Site of Injection.—Into the buttocks, into the glutei muscles, above Nélaton's line. Buttocks scrubbed with soap and water, alcohol, then painted with *tincture iodine.* Injection given at right angles to buttock and extending into the buttock about one and one-half to two inches.

Dose.—Ten per cent. emulsion of *salicylate of mercury* in liquid albolene used. Twelve minims of this given once a week, using the buttocks alternately.

Routine.—Treatment consists in a series or course of injections at intervals. During the intervals patient is kept under observation, and if symptoms appear, treatment is recommended.

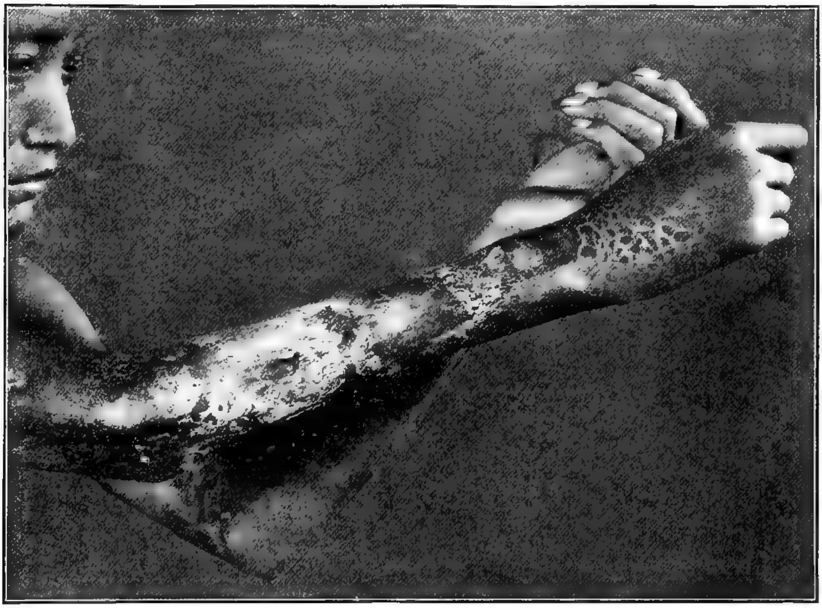

FIG. 289.—Healed gummata of the arm "en cuirrasse," with great loss of function. (*By Jefferys.*)

Injections started when the rash over the abdomen confirms the diagnosis. First course usually consists of about twelve injections. Then the interval of usually six to eight weeks. K. I. may be given in small doses during the interval. Then the second course of about ten injections, then an interval, etc. During the second year the courses of injection become shorter with longer intervals.

Precautions.—After needle is introduced, detach syringe to note if any blood-vessel has been entered. If this happens (about once in forty times), withdraw needle and insert in a new place.

Seal puncture after injection with *collodion.*

Boil needle after each injection.

With aseptic precautions as above abscess is very uncommon, occurring probably not more than once in a thousand injections. Induration and soreness occasionally occur, but very rarely of any consequence.

Symptoms in secondary cases disappear rapidly. Salivation, etc., is very uncommon with this method of treatment. Digestive disturbances, diarrhœa, fœtid breath, etc., are avoided. Especially valuable in obstinate cases and syphilis of the nervous system where a quick effect is desired. The pain on introducing the needle is very slight; most of the patients hardly notice it.

Where a Chinese patient might stay in the hospital grudgingly for a couple of weeks he may be persuaded to come to the clinic once a week for a rapid injection almost indefinitely. The action is constant owing to the slow absorption of the drug, and we have the great satisfaction of seeing and knowing that the mercury really gets inside the patient, and do not simply have to take his word for it.

Stock Mixed Mixture.

℞.	Hydrarg. Choloridi Corrosivi,	gr. i
	Potassii Iodidi,	ʒiv
	Syr. Sars. Comp.,	f℥iss
	Inf. Gent. Comp.,	q. s. ad f℥iii

M. ft. sol.

Sig.—Teaspoonful in half tumbler of water after meals, 3 times daily.

Recipe for Syphilitic Anæmia.

℞.	Hydrarg. Chloridi Corros.,	gr. i
	Tr. Ferri Chloridi,	ʒiv
	Glycerini,	f℥iss
	Liquor Ammon. Acetat.,	q. s. ad f℥iii

M. Sig.—f℥ii, t. d., p. c.

In all cases of **hereditary syphilis**, we are accustomed to give **a tenth-grain of calomel** made up with sugar of milk in tablet form, t. i. d. We are fully persuaded that this is wise practice, and we do not hesitate to administer it as a tonic treatment for anæmic and debilitated dispensary children from early babyhood up, and find it well tolerated in the large majority of cases. It is especially applicable in the treatment of **keratitis of childhood**, and will frequently give remarkably fine results where local treatment is useless. The administration of potassium iodide is not well borne by the Chinese – so much so that we look for loss of appetite and general depression, in even advanced syphilitics, out of proportion to the dose given.

The question of the **hygiene of syphilis** is in China an extremely difficult one. In hospital treatment it is essential that each patient should be isolated to the extent of washing and eating utensils; beyond this we find it difficult to carry the matter. We feel that we have an exceptional opportunity for the education of the Chinese patients in the simple matters of hygiene, diet, and so forth, and we heartily recommend a practice of the careful preparation in Chinese of **tracts on syphilis.** The advantage from the free distribution of such leaflets to each and every patient suffering from this disease, with perhaps a moment of explanation and the direction that they should be pasted in a conspicuous place at home and be studied, is not inconsiderable. Of course there is a waste and leakage through the inability of many to read and the failure of still more to follow. It is certainly a satisfaction to feel that one has given the patient some directions which he may follow, if he will, and should be compared with the alternative of stopping during a busy clinic to explain to a blank face in bad Chinese what one does not know how to say to a person who does not understand anyway and what one is certain will not be remembered under any circumstances. We use this second[1] opportunity of advocating this method in the strongest terms and especially, and above all, in the case of syphilitic patients.

There is a similar method in vogue in the United States Navy, and we hold copies of such tracts on syphilis and gonorrhœa, issued not by Departmental order, but on the enterprise of an individual surgeon—Eytinge—whom we remember as having excellent ideas on this very matter.

(*From the U. S. S. Concord.*)

"Syphilis.

"Syphilis is a disease which has always been regarded with horror because of its distressing and often disgusting pictures presented by its victims when they have neglected themselves and allowed the poison to get the start on them.

"It is a disease which generally succumbs promptly to proper treatment and can absolutely be cured if the patient is willing to take enough trouble.

"The great mistake is to think that you are cured when the sores and the rash go away and when you feel and look all right. It takes at least three years of faithful and persistent treatment to get rid of the blood poison forever. This is why so many cases do badly and syphilis has such an awful reputation. Few men have the perseverance to keep up a moderate, careful, sober and clean life and the faith to go on spending money for doctors and medicine for three years, especially when they feel and look perfectly well. Most men too, think a doctor is playing on their fears, trying to 'work' them by requiring them to keep up treatment so long. They only learn their mistake when it is too late, for the medicines have less effect and do less good, and the forms the disease assumes grow worse and worse as the years go by.

"It is not safe for the patient to take the specifics for syphilis unless he is under the care of a conscientious and careful doctor. The expense of treatment on the outside is considerable. A man in the service, therefore, has a great advantage in that his medicine costs nothing and he can believe what the doctor tells him as the latter is perfectly disinterested in the matter.

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[1] See Chapter XXIII.

"Frequent bathing, moderation in smoking, total abstaining from all forms of alcohol, regular hours, are almost as important as medicine.

"Patients with sores in the mouth or on the lips shall use a separate mess kit and clean it themselves, as the saliva is highly contagious. For the same reason a pipe or cigar which has been in their mouths is liable to carry the disease.

"If a patient is faithfully carrying out these directions and doing all in his power to get well, he should keep up his courage and spirits and not get discouraged. Time and patience will bring him his reward."

Gonorrhœa.

The Chinese suffer from **gonorrhœa.** It is known in Shanghai by the name of "bak-zok," or the white flow, and is thoroughly recognised as of venereal origin. Except among the gentry, and especially among students, it is not commonly met with as requiring treatment. We mean that the great coolie class does not seem particularly to mind the simple urethral affection or pay much attention to it. We suppose it may broadly be stated that gonorrhœa in China is like gonorrhœa in every other nation. We think we may say that it is almost universally of venereal origin. It is exceedingly common among the prostitutes of Shanghai, as evidenced by the fatal frequency of its acquirement by foreign sailors in port and by the invariable response of the Chinese youth when asked how he acquired the trouble. From the frequency of the disease among men, married and otherwise (though we must confess we think chiefly otherwise, or at least acquired before marriage), we may take for granted that the disease is common among Chinese married women, even though they may be of exemplary virtue. That is, **gleet in married men is frequent,** therefore, they must surely infect their wives as a result. But we do not commonly see the disastrous effects of pelvic ovarian diseases of gonorrhœal origin, so reluctant are Chinese women to permit abdominal surgery.

The later developments of gonorrhœa in men are stricture, more or less complete, usually posterior or at least bulbar, and frequently eventuating in periurethral abscess and urinary sinus formation; (one must expect to find these opening not only from the superficial urethra, but from the deep urethra as well, and sometimes emptying in the ischiorectal space). Vasitis and epididymitis are frequent, gonorrhœal orchitis likewise; the eventual history of such progressive cases may be looked for as follows: acute gonorrhœa, quiescent period, epididymitis, abscess of the testicle, external rupture, hernia of the testis, either complete or partial.

"I sometimes wonder if there is a Chinaman without either a fistula or pile, a bubo or phimosis."—*A. W. Tucker. Shanghai.*

In connection with this latter issue we would emphasise the imperative necessity of some days of preparatory treatment and sterilisation before either attempting castration or reduction of the organ. As once in our own experience, there will be occasionally found inguinal hernia associated, and the careless attempt to remove a filthy testicle under such conditions would almost certainly give peritoneal infection; whereas, as in the case we refer to, after thorough preparation (Harrington's solution, see Chapter XIV) the operation may be accomplished safely.

We have spoken of delaying operation when possible in order to cleanse and prepare ulcerated surfaces before undertaking their extirpation. We wish we could sufficiently emphasise both the desirability and duty of doing so, not only as a time saver in the end, but as a life saver as well. One never knows what one is really going to find in an operation, nor where one is going to end. We have had three castrations this year for herniated testicle. Our rule is to put the patient to bed and for a week, or as long as is necessary, to have the part daily cleansed and rendered as healthy and clean as possible before operation, and then at the time to so

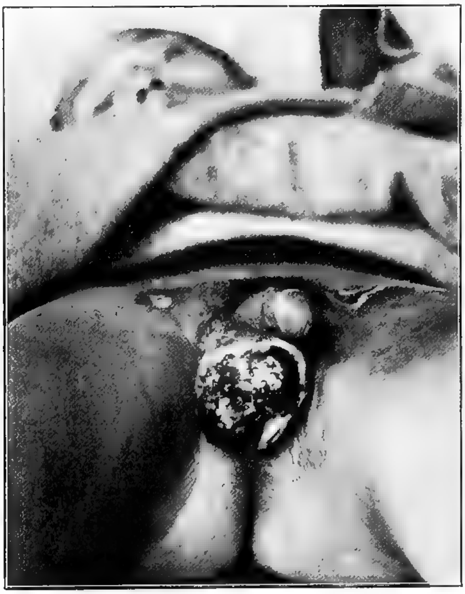

FIG. 290.—Double hernia of testicle, of gonorrhœal origin. (*By Jefferys.*)

protect the wound from the old ulcerated surface as to, if possible, prevent infection. In the first two cases the castration was as simple as could be and without complication. In the last, in which the testicle had been a particularly dirty one and had been especially carefully prepared, we sailed in without any misgivings whatever to find ourselves in the centre of a patulous tunica vaginalis and with our fingers in contact with the bowels. There had been no previous history or sign of hernia, and yet had there been any carelessness in the preparation of the patient or of the operating hands, or if the patient had been operated upon promptly on admission to the hospital, he would, without doubt, have become the victim of a peritonitis of operative origin. The sac was easily tied off and the patient made a good recovery. It is by no means in these cases simply a question of preparation of the patient on the morning of operation, but also, and of equal importance the careful nursing of the parts into condition for operation.

In making up one's mind whether to remove the organ or not, one should be guided by the amount of tissue destroyed and the condition of the epididymis. If much of the testicle has sloughed away or the peculiar, hazelnut-sized cyst has formed on the concave of the testicle, indicating obstruction of the epididymis by stricture thereof, the useless organ had better be removed. Otherwise a successful re-implantation of the testicle, by dissecting it out and replacing it in the scrotum, may be attempted in selected cases.

Treatment.—Chinese men are **not tolerant to radical urethral treatment.** They are not cleanly enough in their habits to be entrusted with the urethral syringe, nor will they be easily persuaded to administer to themselves any so painful therapeutic procedures as the injection of zinc or the silver preparations, Except under an anæsthetic, they will rarely submit to a second treatment with metallic instruments, and the limit of endurance of gradual dilatation is reached usually before the first sound is passed. Whatever may be done under local or general anæsthetics, however, will probably be permitted. As a result of this experience we are of the opinion that most surgeons will find it necessary to vary their treatment of gonorrhœa and its sequelæ quite radically from that which is accepted as the best practice at home; the argument being that it is better to be permitted to use the milder methods of treatment than to be refused permission to do anything at all. It will probably not appeal at first to those who read this when we recommend as a routine treatment of acute gonorrhœa something like the following:

Rest, low diet, interdiction of alcohol, large quantities of hot water by mouth, urotropin q. d., or boric acid, and, according to need, cold, and lead and opium externally.

Laten-Lafayette Mixture for Gonorrhœa.

℞.	Balsam of Copaiba,		
	Spirits Lavandulæ Comp.,		
	Spirits Æth. Nitrosi,	āā	f℥ss
	Liq. Potassæ,		fʒss
	Ol. Gaultl.,		fʒii
	Mucilag.,	q. s. ad.	f℥ii

Sig.—fʒi-ii 1 hr. p.c.

Then, tentatively under cocaine, zinc injections (or protargol) administered by the surgeon with extreme gentleness. In chronic gonorrhœa we have great faith in prostatic massage, followed by deep permanganate douching, neither procedure being excessively painful.

W. F. Glenn recommended the following:

℞.	Zinci Iodidi,	gr. xv
	Zinci Chloridi,	gr. i
	Aq. dest.,	oz. vi

M. et Sig.—Use three times a day as an injection.

—*Journal American Medical Association.*

"After gonorrhœa has run for five or six weeks, the patient becomes uneasy and wants 'something better.' To such an one, and to the man with 'gleet,' the following may be given:

℞.	Alum,	0.8 gm.
	Lead Acetate,	0.8 gm.
	Zinc Sulphate,	0.8 gm.
	Glycerin,	16.0 cc.
	Water,	112.0 cc.

"**Directions.**—Use as an injection three or four times a day; shake well before using; hold injection two minutes, if possible. Chemists claim that this formula should not be prescribed, since it contains 'incompatibles' and a precipitate is formed. This is exactly what is wanted—it is the retention of some of this precipitate in the urethra for hours that does the good."—*American Journal of Clinical Medicine.*

(*U. S. S. Concord*).

"Gonorrhœa.

"A great many people regard the clap as a joke, as a very light affair, and as soon as the pain and the discomfort of the first few days goes away take no further pains to get well. After months have passed and they still have the discharge they are only too ready to lay the blame on the doctor.

"Report for treatment as soon as you have discovered anything wrong. Keep the affected parts as clean as possible with use of plenty of soap and water.

"Be careful how you put your fingers to your eyes or wipe them on a towel that has been used to wipe your hands. A single drop of pus from the penis getting into the eye will set up a violent inflammation and may lead to blindness.

"Smoke as little as possible and do not drink liquor until you have been well for some time.

"The bowels should move every day.

"Drink a great deal of water, especially in the morning and afternoon. This will lessen the burning and help keep the disease from the bladder. Make it a rule to empty the bladder before turning in for the night. As far as possible avoid the more greasy foods. For example, eat the beans but not the pork, the sauerkraut but not the 'dogs,' etc., etc. When the discharge stops report to the doctor for examination. Do not wait until the liberty party is about to leave, to rush down to the sick bay to have your name scratched off the restricted list. Patients will not be taken off the restricted list until the discharge has ceased and all evidence of the disease disappeared for a sufficient period to prove that they are cured.

"A single glass of beer or some other slight indiscretion before the cure is complete often suffices to bring back the original trouble, which then settles into a chronic condition."

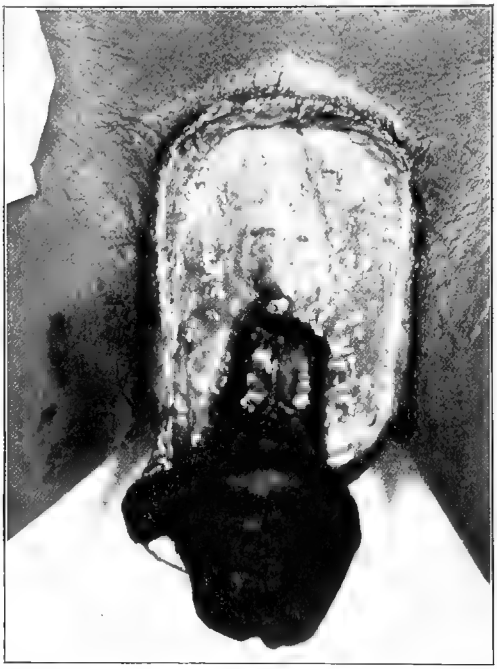

FIG. 291.—Spontaneous amputation of the penis, from gonorrhœal inflammation. (*By A. W. Tucker, Shanghai.*)

What shall we say of **stricture?** The treatment is unsatisfactory for the simple reason that post-operative dilatation is almost invariably not tolerated. In our experience, after two or three attempts, the patient runs away. We are therefore constrained to advise complete dilatation or cutting under anæsthesia, the introduction of a large rubber catheter for as long as it is borne with safety, the passage of a large sound or two under cocaine, and, if allowed, the subsequent passage on alternate days of a medium-sized bougie (and to patients of good intelligence a private instrument may be intrusted); and faith in a merciful providence for the rest.

A common condition of the urethra is obliteration, all but complete, of the meatus urinarius, due to cicatricial contraction following gonorrhœa. It is practically stricture of the meatus and may be complicated by any number of more posterior strictures. Urination is drop by drop, tedious, and occasionally painful. It is not easy to obtain satisfactory results in this condition since dilatation will split the meatus and other operations are apt to be followed by recurrence. If the meatus is merely split downward the result will be permanent, but the flow of urine will point backward, and even copulation may be interfered with. This, however, usually gives the best results that are obtainable. Plastic operations will not prove satisfactory.

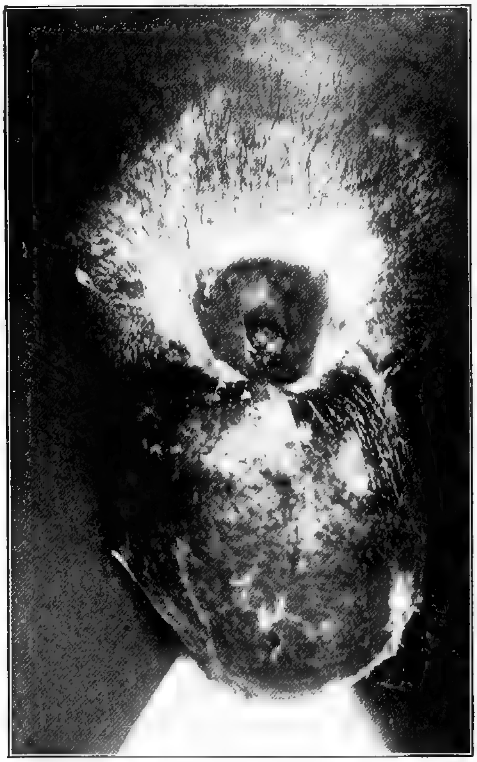

FIG. 292.—Same as Fig. 291, after spontaneous amputation.

Finally, **acute orchitis.** Abscess is frequent, as we have already stated, but when seen early we would recommend the usual treatment with elevation, and so forth, in bed, and as a local application, we have no remedy which compares with the saturated Epsom salt poultice treatment for the relief of the excruciating pain of this condition. It is as follows:

To a pound of Epsom salt add a pint of warm water. After settling; in this wring out several layers of absorbent lint, in which the elevated organ is wrapped up. This again is covered with dry cotton and still again with waxed paper, to retain the moisture. At intervals more solution should be poured on, and after a few hours the pain is usually quite bearable or in abeyance.

We have great faith in the remedy, which we have used in similar acute inflammatory conditions, such as arthritis, rheumatic joints, gout, and so forth.

Gonorrhœal Rheumatism.—See Chapter XVI.

Chancroids.—We are not aware that any special bacteriological study of chancroids in China has been made, but there is certainly no reason for expecting marked difference from home findings. Chancroids are common, are apt to be extensive in their destruction of tissue, and usually to require radical disinfection with cautery, carbolic acid, 60 grain nitrate of silver, and so forth, as a preliminary procedure in their cure. But we must be guarded in order not to mistake the destructive ulceration of gumma, carcinoma, and tubercle for chancroid, by which we mean non-specific ulceration of venereal origin.

We remember once treating **supposed chancroid** of the glans penis for a month by cautery and other radical means and finally doing an amputation after realising with embarrassment that we were handling carcinoma. Booth (Hankow) has reported cases—one in particular—of complete destruction of the penis and disorganisation of the remaining external genitals by gumma of so malignant a nature as to give the impression of phagedænic ulceration.

It is unnecessary in a treatise intended for graduate practitioners to go into the question of differential diagnosis, but we think that one would do well to remember, besides the well-known characteristics of the various conditions alluded to, the generally moist and bitten-out appearance of chancroid ulceration as against the comparatively dry induration of carcinoma, the granulation and infiltration of gumma, and the badly nourished appearance of tubercle and especially its tendency to puncture the thin blue skin at intervals.

Before leaving the subject of venereal disease in China, we are inclined to add a few words by way of **general impression** and testimony and suggestion, too.

In the first place, as missionary physicians, most of us practising in China are thrown in very close contact with our patients, and we cannot too strongly urge the use of rubber gloves in the treatment of venereal disease. We have been consulted on several occasions by foreign physicians who have acquired syphilis innocentium (primary sore on the hand), and specific ophthalmia from their own hands. In two cases at least ophthalmia was from vaginal examination, and in spite of conscientious efforts at subsequent manual sterilisation, the infection of gonorrhœa is extremely tenacious, and nothing short of rubber gloves, which can be removed and boiled, may be entirely trusted. And as for syphilis, the infection is subtle, and who can say that at any moment his hands—and especially in the neighbourhood of the finger-nails—are free from the possibility of infecting with lues. The danger of specific ophthalmia to the physician practising alone or with insufficient assistance in a native city is so great as to warrant the utmost carefulness to avoid it, and infection with syphilis under like circumstances practically means at least the none-too-temporary abandonment of one's missionary enterprise or other practice.

"Prophylaxis.

"Those who attend ophthalmia cases cannot be too careful in guarding against infection. In a country where for months together one sees fifty or sixty acute cases a day or even more, familiarity is apt to breed contempt.

"Spectacles with a gauze screen should always be worn to keep out the flies.

"The hands should be well washed with soap and water between each case, and before the handkerchief is used they should, in addition, be soaked in a disinfectant. If the handkerchief become infected sooner or later the medical man will contract opthalmia.

"It should always be borne in mind that pus may squirt from a baby's eyes when they are opened.

"If these hints are followed out the doctors and nurses will not contract ophthalmia, but if there is the slightest carelessness they certainly will, and, in fact; often do become victims to the disease.

"Three nurses have, to my personal knowledge, contracted ophthalmia in Palestine with the following results: One recovered, one received permanent damage, and the third lost an eye.

"The treatment of acute ophthalmia in the East."—*T. H. Butler*, *Royal London Ophthalmia Hospital Reports*, Vol. XVII, Part I.

It is a common custom in mission hospitals in China to charge venereal patients a double fee or more because of the troublesomeness of their treatment, the necessity for extra precautions, and perhaps partly, because of the deliberate circumstances of their acquirement of the disease. There is a good deal of reason in this hospital regulation, though we do not ourselves follow the custom, thinking that we do not clearly see the ethics of the physician's *quasi* attempt at punishing the sins of his patient, and, perhaps, partly feeling that the natural punishment fully and meetly fits the crime. It is so general, however, that others evidently see the matter in a different light. We do regularly charge more for cosmetic surgery—many times more—than for surgery required by diseased conditions, and not occasionally add considerably to the income of our hospital by operation for hare-lip, cleft ears, depressed nose, and the like. The matter is not important and each will judge for himself.

Finally, we would bear testimony to the **sincere and all-pervading modesty of Chinese womanhood.** The women in China are stiff and awkward in general, and not often, according to our ideas, daintily pretty, and rarely, if ever, beautiful. But they are, to our mind, the most truly modest race of women on earth, and their modesty is sincere and all-pervading. They are modest in dress and in deportment, and look at the things behind the veil with extreme naturalness and simplicity. We have never in our life in China seen a woman expose herself or, except among the prostitute class, commit any act of open indecency. As mothers and wives they are faithful and pure.

As regards the men, they are not, as a race, particularly licentious. Immorality is frowned down upon in family life, and the results of immorality deplored and held as a stain. Most fortunately for the life of the white races in China, the desire of the Chinese is for their own, and for this we may be thankful and hold them in sincere respect. But the ideas of the Chinese man about the exposure of his person and the performance of his functions are crude and indecent, almost barbaric at times. We have heard the sentiment expressed by a distinguished foreign resident in China, that most of the national traits and ideas of the Chinese may be traced to sexual origin, as, for example, ancestor worship. But we think the matter far-fetched.

Of the grosser sexual sins, **sodomy** is common in Korea, and not uncommon in the ports. Masturbation among boys is found, but not in excess, and the invariable rule and feeling that a man who passes beyond the age of eighteen or twenty without contracting marriage is an incomplete individual may be regarded as a tremendous safeguard of the nation's purity.

CHAPTER XXI.

GYNÆCOLOGY AND OBSTETRIC OPERATIONS.

The association of these two important subjects in one chapter may seem strange. Our excuse is that our space is limited, that the subjects are kindred, and that we only wish to deal with the diseases most commonly met with by workers among the Chinese.

General Considerations.—Whether we refer to gynæcology or obstetric operations ignorance and superstition are so prevalent as to complicate or render difficult the proper treatment of many of our patients. While this applies to medicine and surgery in general, to no branch does it apply so much as to the one now under consideration. Examples of this are never far to seek and we give some here.

Bixby, Kiehyang, reports a case as follows:

> "In obstetrics more than in any other branch of the work are we called upon to witness the pitiful ignorance and superstition of the people. In one case we arrived just in time to rescue a young woman who was being "hung," because she had had a slight hæmorrhage and had fainted, and was supposed to be in labour, though she was not. A ladder had been brought in and stood upright and to this she was tied by the hair and supported by a high stool only, and thus she was being pounded and pinched to drive out the evil spirits. When we arrived she had been unconscious for some time and was almost pulseless. With some difficulty we got her down and laid her in the bed and applied restoratives. She recovered fully and a month later gave birth to a fine baby boy."

We have already referred (Chapter XV) to the case of a young woman suffering from a suppurating extra-uterine gestation, the sepsis being caused by acu-puncture by a blind Chinese practitioner.

Under the heading of "General Considerations" we wish also to refer to a subject that has always astonished us in gynæcological practice among the Chinese. Gonorrhœa in women is an extremely common disease, yet we meet with little of the plastic inflammation to which the best authorities at home attribute the sterility and pelvic adhesions which are supposed in western lands to follow gonorrhœa in the female, and, further, pus-tubes are very rare.

Taken all round serious gynæcological affections are very much less common in China than at home, whether we refer to functional or visceral disease.

GYNÆCOLOGY.

Affections of the Vulva.—These are very common, but for the most part this applies to the ordinary inflammatory affections, venereal disease in all its forms, with vulvitis and abscess of Bartholin's gland, all of which are fully dealt with in general text-books. Tumours are rare, whether innocent or malignant. As in other parts of the body they are sometimes met with in extraordinary forms, owing to lack of treatment. One such case coming to us for treatment exhibited a pedunculated fibroma, reaching down to the knee, suspended from the labium majus by a thin cord-like pedicle, with a history of many years' growth. One form of disease will be rare to those coming out from the West to practise in China, viz., elephantiasis of the vulva. This has been fully dealt with in Chapter VI as regards its major form, but in a very much less exaggerated type it is common as the result of chronic untreated vulvitis usually of gonorrhœal origin. These cases come to us with a condition of chronic hypertrophy of one or both labia majora, the labium being covered with rough unhealthy skin. Such cases are best treated by excision, a very simple operation, consisting in turning a flap of healthy skin up from the

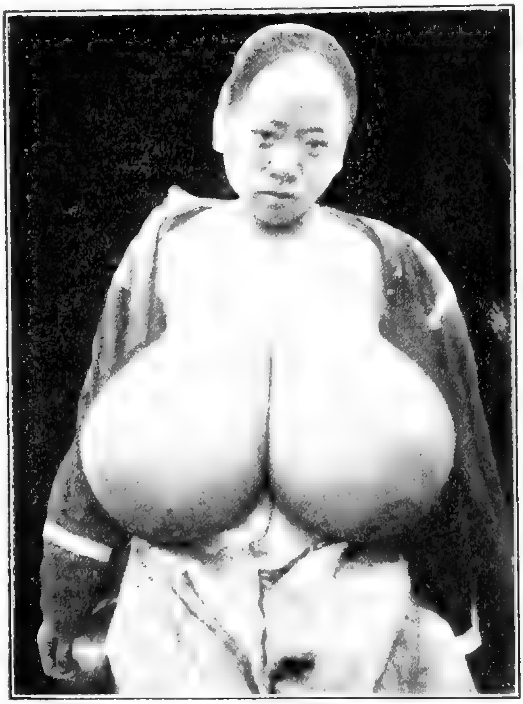

FIG. 29.—Hypertrophy of both breasts. (*By A. W. Tatchell, Hankow.*)

base of the labium on each side, and then cutting away the labium itself with the underlying tissue. The flaps are drawn together with sutures.

Affections of the Vagina.—Vaginitis like vulvitis is common, but the lesion of most importance that we meet is vesico-vaginal fistula from dystocia. Vesico-vaginal fistula can of course be caused by tears in the course of instrumental delivery, but in the absence of instruments this cause does not come into play. The condition is probably always the result of sloughing caused by the pressure of the delayed head in the pelvis. In the absence of skilled assistance the head may be delayed for many days in the pelvis, and the resultant destruction of tissue will then be enormous. The whole of the front wall of the vagina may slough away, and this may be further complicated by large holes in the recto-vaginal septum, and finally the resulting scar tissue may so alter the shape and direction of the vagina as to make examination almost impossible. For practical purposes the cases may all be divided into those in which the continuity of the bladder wall can be restored by operation, and those in which this is impossible.

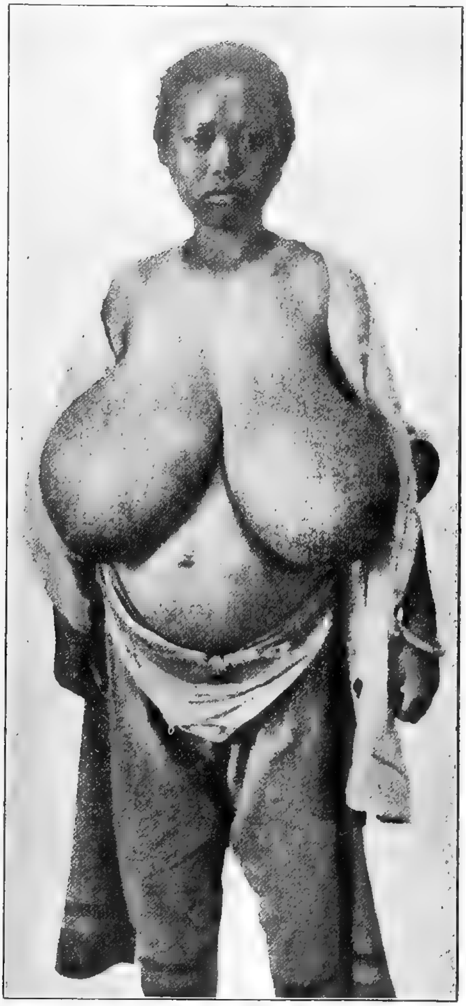

FIG. 294.—Simple hypertrophy of the breasts. Amputation is the only treatment available (*By Maxwell.*)

Inoperable Cases.—Not a few patients come to us in whom either because of the enormous area of the bladder wall destroyed, or on account of extensive vaginal adhesions, in some cases almost obliterating the vagina, any operation with a view to closure of the gap is impossible. In some of these patients the upper and anterior wall of the bladder prolapses through the opening, and appears at the vulva as a cherry-red bleeding mass.

The condition of these women is very miserable, for in addition to the horrible discomfort caused by the fistula itself, the protruding bladder wall is so tender as to make sitting impossible. In such cases even though operation on the fistula is impossible a considerable amount of relief may be given to the patient by a small operation which prevents the prolapse of the bladder. We have managed this very satisfactorily in one case by a simple ventro-fixation of the bladder. A small incision is made over the pubes, the upper part of the front wall of the bladder caught and secured in the wound by a few sutures. The pain on sitting is thereby completely relieved.

Operable Cases.—In a simple case where the fistula is of no great size the operation is easily performed. The patient is placed in the lithotomy position and with an angular knife the whole of the vaginal opening is pared, a raw edge being thus formed of vaginal and vesical mucous membrane. After the bleeding has ceased sutures are introduced through the whole thickness of the tissue on both sides. If any strain is thrown on the vaginal wall, lateral liberating incisions should be made.

Unfortunately, in most of the cases we see the fistula is far too large for such simple treatment. In large fistulæ the operation is carried out as follows: The cervix is seized with a pair of volsellum forceps and pulled well down and the vaginal wall separated from the anterior wall of the cervix for some distance. This allows of much more freedom in getting the edges of the fistula together. No paring of the edges is done as with a large fistula; no material can be spared for this, but with a sharp bent knife the bladder is separated from the vagina for about half an inch to an inch all round the fistulous opening. Liberating incisions are made to allow of easier approximation of the edges and the sutures are passed through the edge of the vaginal side of the fistula and, passing deep to the fresh incision, emerge again on the vesicle edge of the fistula, passing through the other side of the fistulous opening in the reverse direction. In specially severe cases it may not be possible to close the whole of the fistula at one operation and this may have to be repeated.

In all cases preparatory treatment should be given by regular douches of hot water morning and evening for some days previously to reduce any inflammation of the edges of the fistula and remove any deposit of urinary salts. After-treatment consists in the keeping of a self-retaining catheter in position for four days, and later regular catheterisation every six hours for a week. Daily sponging out of the vagina with a swab dipped in some mild antiseptic solution should be practised for the first week.

Affections of the Uterus.–**Functional.**—Functional affections of the uterus with the exception of amenorrhœa are comparatively much more rarely seen among the Chinese than among women at home. Dysmenorrhœa is but seldom complained of in its severer form, though mild cases are not uncommon. In Formosa we have only once met a case of true paroxysmal dysmenorrhœa, and that in a Japanese woman, and even in this case it yielded easily to treatment. It is difficult to account for the rarity of this affection.

Menorrhagia is also an uncommon affection probably due to the relative scarcity of cases of fibroid tumours of the uterus.

When the disease is complained of it is usually found on closer questioning to come under the heading of Metrorrhagia, and as such is commonly associated with incomplete abortion or malignant disease. On the other hand, amenorrhœa is extraordinarily common, this is the main symptom complained of in probably a fourth of our women out-patients in Formosa. It is possible that in South China and Formosa we meet with more of the affection than in the non-tropical regions of China. In a very large number of the cases the trouble is associated with splenic enlargement, commonly malarial spleen. Chronic enlargement of the spleen even apart from the anæmia it induces, profoundly affects the development of the genital organs both male and female.

It is far from rare for girls of nineteen and twenty or even older to be brought to us on account of primary amenorrhœa, and in these patients it is almost always the case that marked hypertrophy of the spleen is the associated condition. Where the enlargement of the spleen is not a prominent symptom the cases are usually associated with the debility and anæmia of prolonged hyper-lactation or with ankylostomiasis. Occasionally we see amenorrhœa as a result of definite hyper-involution after pregnancy. In the large majority of cases a prolonged course of an iron and arsenic tonic will restore the functional activity, attention being paid to the question of lactation and ankylostome infection.

A word or two should here be given on the subject of **sterility.** Seeing that the birth of sons is so essential an element in the Chinese system, and the absence of a son not only leads to marital trouble but also to concubinage, it is not surprising that the physician in China is often consulted on this subject. It is doubtful if any operation is of any benefit whatever directly, but dilatation of the cervix with curettage is from time to time followed by pregnancy. This we attribute, however, not so much to the operative treatment as to the improvement in general health that takes place during the patient's residence in hospital, and to the three months physiological rest following on the operation which we stipulate for, as a *sine qua non*, before consenting to operate.

Inflammatory Affections.—Cervical catarrh with leucorrhœa is extremely prevalent as also are erosions of the cervix. Endometritis is not particularly so. The treatment of these affections follows the same lines as in the home countries, if indeed any local treatment is to be carried out, the wisdom of which in most cases is doubtful.

Errors of Position.—Retroversion of the uterus, if it occurs commonly, gives rise as a rule to no symptom whatever in a Chinese woman. We have only seen one case in which the uterus was retroverted and fixed in Douglas' pouch by adhesions.

Retroverted gravid uterus is met with about as frequently as in foreign lands, but owing to lack of treatment the condition of the patients when they reach us is sometimes very serious. We had one case where the patient was brought to us with the bladder wall sloughing, and the patient dying of hæmorrhage from the vesical vessels. From another case we drew off 140 ounces of urine, the patient having passed none for seven days. The treatment should be confined as a rule to emptying the bladder, and keeping it empty. The uterus then rights itself in a few days. It is very seldom that any mechanical force is necessary to push it up. After emptying the bladder of a very large quantity of urine it must be remembered that the kidneys relieved from the back pressure, secrete with great rapidity, and the bladder must be emptied every two or three hours for the first twelve.

Prolapse in all degrees is commonly met with, and women who work much in the house or in the fields frequently request treatment for this condition. Nothing impressed us more in our own work among the poorer classes in London than the filthiness of the method of using ring or other pessaries for the support of a prolapsing uterus. Among the Chinese, especially where owing to distance our patients often see us only at long intervals, the objection to pessaries is multiplied many fold. We never use pessaries and we advise our readers to follow this rule. We treat and warmly recommend the treatment of all cases of prolapse by ventro-fixation of the uterus. Many objections have been raised from time to time to this operation, but we believe that such objections should apply to the methods employed not to the operation itself. We have operated a large number of times and always with satisfactory results. We do not wish to suggest that the operation we employ is the only good one, but it is thoroughly satisfactory as being simple, speedy, and we believe free from risk. The abdomen having been prepared in the usual manner and the patient anæsthetised, an assistant introduces a sound into the uterus and holds the uterus up with the sound against the anterior abdominal wall. An incision opening the abdominal cavity about 2 inches long is made, the lowest point of which reaches to about 1 inch from the top of the symphysis pubis. Any coil of intestine is pushed aside and the assistant with the help of the sound makes the uterus present in the wound. The top of the uterus is seized with volsellum forceps, and held in position with these. Three sutures of linen thread (or other material) are passed through the whole thickness of the abdominal wall, except the peritoneum, from points 1 1/2 inches outside the incision to similar points on the other side of the incision, passing through the muscular wall of the uterus in their course. The stitches are about 1/4 inch apart, the highest being just below the top of the uterus on the anterior surface. The volsellum forceps are taken off, the upper angle of the peritoneum closed with a single suture, and the wound sewn up. While this is being done an assistant keeps the uterus in position by pulling on the sutures that pass through the uterine wall. Finally, when the abdominal incision has been sutured the uterine stitches are tied. All sutures are removed on the tenth day. By suturing in this manner the front of the uterus is applied to the anterior abdominal wall, no artificial anterior curve is given to the body nor is the actual summit of the uterus involved in the sutures. If pregnancy occur the uterus therefore enlarges in the natural manner quite unaffected by its position. A number of our cases have become pregnant, and none have suffered abnormally during pregnancy, labour, or puerperium. The only objection indeed to this method is that the uterus is apt to detach itself from the abdominal wall during pregnancy, and the prolapse to recur during the puerperal period. In two of our cases this has occurred. One warning should be given about the tying of the uterine sutures. If this be done too tightly the circulation is impaired at the edge of the incision and slight sloughing of the skin edge is likely to occur. At first we were a good deal troubled with this. In recent cases, however, we have tied the sutures over a rubber tube, and this has quite obviated the difficulty while maintaining sufficient tension on the uterus to hold it in place.

Tumours.—Polypi both mucoid and fibroid are met with but are relatively less common than at home. When fibroid polypi occur they may, owing to the late date at which the patient applies for assistance, prove very troublesome. This is well exemplified in a case admitted to hospital under our care. A woman of about forty years of age was brought in, in apparently a dying condition. She was stated to have had hæmorrhage from the vagina for many months. Nothing more definite could be ascertained. She was absolutely blanched and the skin slightly œdematous; on examination a mass rather larger than a fœtal head occupied the vagina, and a little sanguineous fluid, hardly red enough to be called blood, trickled away. The finger could not be introduced past the vaginal mass, but the uterus could be felt, of apparently normal size perched on the top of the mass. On inspection the tumour was evidently a fibroid polypus. The patient was so weak that she fainted on trying to rise. With the aid of a long bent probe passed round the tumour it was discovered that the pedicle was quite small. A few whiffs of chloroform were given to deaden pain and a long pair of curved scissors passed up between the tumour and the vaginal wall and the pedicle snipped through. The tumour was rapidly split in two with an amputation knife, and the halves pulled out with strong volsellum forceps. A bleeding vessel in the pedicle was then tied. The patient made a very rapid convalescence.

Submucous, interstitial and subperitoneal pedunculated fibroids of the body of the uterus are all met with, but taken all round fibroid disease of the uterus is rare and we do not meet with it with sufficient frequency to demand any special description here.

Cancer of the cervix on the other hand while less often seen than at home is sadly common, even in the third decade of life we not very rarely meet with it. Unhappily, no case has yet presented itself to us for treatment while within the reach of radical operation. We fear that it will yet be many years before Chinese women are educated up to the point of coming to the foreign doctor, or indeed to a doctor of their own people at the earliest stage of this disease. Radical operation being therefore almost out of the question, is there anything that we can do to relieve the sufferers from the intolerably, foul discharge and constant hæmorrhage that attend advanced malignant disease of the cervix? In not a few cases there is. What we recommend strongly, not as a radical but as a palliative operation, which completely relieves the patient from these distressing symptoms and actually we believe prolongs life, is the following: It is applicable in all cases where the cervix is mainly the seat of disease, and the vaginal wall is as yet moderately free from infection. The patient having been anæsthetised and placed in the lithotomy position the cervix at any part where a hold can be obtained is seized with a very strong pair of volsellum forceps and steadied with these. With a stout pair of blunt-pointed curved scissors the mass of diseased tissue is rapidly cut away by a series of short snips, no attention being paid to the hæmorrhage. The cutting should be as free as possible, care being taken not to wound the bladder. It is of no importance if Douglas' pouch is opened accidentally in the process if the patient is well supported in a semi-sitting position after the operation.

A firm plug is now held against the bleeding remnants of the cervix and the vagina packed all round with swabs soaked in a saturated solution of bicarbonate of soda. The hæmostatic plug is now removed, a small swab soaked in a strong solution of zinc chloride is quickly pushed into the hole which represents the cervix, and the rest of the vagina filled up with more swabs soaked in the solution of bicarbonate of soda. The soda swabs are removed the next day, the zinc chloride one is allowed to separate of itself a few days later.

The immediate result of this is a healthy granulating surface, with a complete absence of foul discharge and hæmorrhage. The patients are, in our experience, always immensely relieved, and death usually takes place from internal dissemination with little if any recurrence of the local discharge or hæmorrhage.

Affections of the Tubes.—Pyosalpinx and hydrosalpinx are both met with but not in sufficient frequency to warrant any special description here.

Tubal pregnancy is relatively very uncommon, but from time to time cases are reported. For diagnosis and treatment we must refer our readers to the larger works on gynæcology.

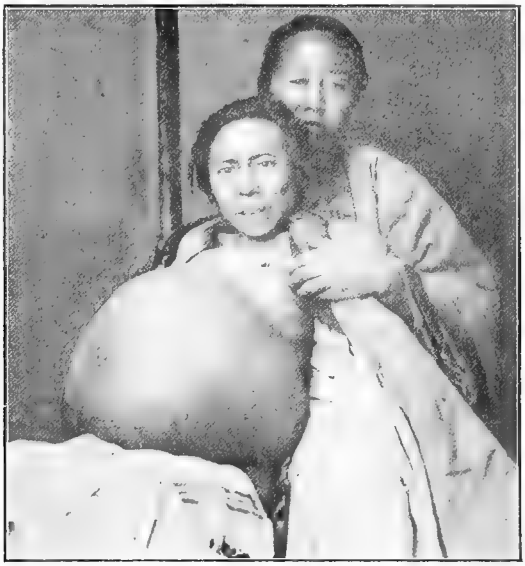

FIG. 295.—Ovarian cyst. (*By J. Butchart, Luchoufu.*)

Affections of the Ovaries.—The only disease that claims our special attention here is cysts of the ovary. All forms of these are found, from the simple unilocular cyst to the complicated dermoid. Among the Chinese we meet with ovarian cysts of a size hardly dreamt of by western surgeons. The largest recorded ovarian cyst we believe was operated on by Reifsnyder, Shanghai.

A Monstrous Tumour.—In a medical work, "Curiosities of Medicine," illustrations are given, accompanied with statements regarding the removal of an immense tumour weighing no less than 180 pounds, and containing no less than 22 gallons of fluid. The patient was a young Chinese woman, the operator Elizabeth Reifsnyder.[1] The woman was only twenty-five years of age, and her height was only 4 feet 8 inches, her girth before the operation being 5 feet, 0 inches

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[1] Shanghai.

Several surgeons have reported cases in which the fluid, plus cystic tissue, weighed more than the patient did after removal. R. T. Booth (Hankow), J. H. McCartney (Chungking), E. Reifsnyder (Shanghai), and others have had large experience with these tumours. In January, 1903, McCartney reported a tumour weighing 72 pounds 6 ounces, the patient herself weighing but 50 pounds, or 22 pounds 6 ounces less than the tumour. His account of the operation is as follows:[1]

> "The sack was found firmly adherent to the peritoneum. The fluid was drawn off through a cyst-trochar and proved to be about the consistency of cream and of a dark colour. The entire anterior surface was firmly adhered to the peritoneum and the posterior surface had numerous adhesions to the omentum. The adhesions were broken down and the tumour pulled out, ligated and cut away. The bleeding from the surface of the peritoneum was persistent and profuse. So much so that the abdomen was flushed with saline solution once or twice. On removal of the large tumour, which was on the right ovary, there was shown to be a tumour about the size of a man's head on the left organ also. This was removed and the stumps were ligated with kangaroo tendon."

In May, 1908, Booth[2] reported removal of a tumour containing 60 pounds of fluid.

> "A hand was passed in as far as passible to free tumour wall from peritoneum, to which the former was adherent above. Abdominal towels were then packed in around the edges of wound between tumour and abdominal wall and the cyst punctured with a large Spencer-Wells trochar. No fluid escaped at the sides of the trochar, all passing through the tube into a large kong (jar) under the table. As the fluid escaped and the walls of cyst became lax, large forceps, Nélaton's and others, were clamped in the cyst wall, and by aid of these the assistant lifted the tumour more and more out of the wound until sufficient fluid had escaped to allow several inches of cyst wall to come out and hang over the edge of the wound and thus drain. The flow of escaping fluid was controlled so that the emptying of cyst should not affect the heart and respiration. When nearly emptied the opening in the cyst was clamped and a hand was passed in to ascertain the extent of adhesion. It was found that the lower half of the tumour was perfectly free from adhesion, but the upper half was adherent to the peritoneum, to the under surface of the liver, to the omentum and stomach. None of these adhesions were dense, all being easily peeled off with a sponge, and little or no oozing took place, except in one or two places and then it was easily controlled by pressure with a hot sponge. It was necessary to prolong the incision above the umbilicus several inches in order to get room to deal with these adhesions. It was found that a subsidiary cyst occupied the upper segment of the large cyst, and subsequently it was found that the contents of this cyst had become purulent, explaining the adhesions being located in this part, while the remainder of the parent cyst wall was quite free. Before freeing the deepest adhesions the pedicle was ligatured and the tumour cut away from it, thus enabling the adhesions above and behind to be more easily dealt with. All adhesions being freed, the tumour was removed and the toilet of the peritoneal cavity commenced. Sponges wrung out of hot sterile water were used and all

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[1] *China Medical Journal*, January, 1903.

[2] *China Medical Journal*, May, 1908.

the cavity was carefully gone over. Following the advice given by G. Smith and others, 'when in doubt, drain, it was decided to drain, as the adhesions had been fairly extensive, though none had been dense. A Keek's glass drainage-tube was inserted into Douglas' pouch and left protruding from the lower end of the abdominal incision. The peritoneum was brought together with a continuous suture of Pagenstecker's celluloid thread and the muscles were next united by a continuous chromic gut suture; the skin being finally brought into apposition with interrupted sutures of silkworm gut. No antiseptics were used from beginning to the end of operation, everything being aseptically prepared, with the exception of the scalpels, which had been previously soaked in pure carbolic. The operation from first cut to last suture took one and three-quarter hours.

"The largest ovarian cyst on record here, a multilocular one, was successfully operated on early in the year. It presented no peculiar feature aside from its unusual size, 116 1/2 pounds. The pedicle required ten interlocked sutures of silk and a large venous supply necessitated special care as did also extensive omental adhesions and vascular supply. No complications followed the operation. All of twenty-five tumour cases except three had adhesions, most of them extensive."—*Swan, Canton*, 1908

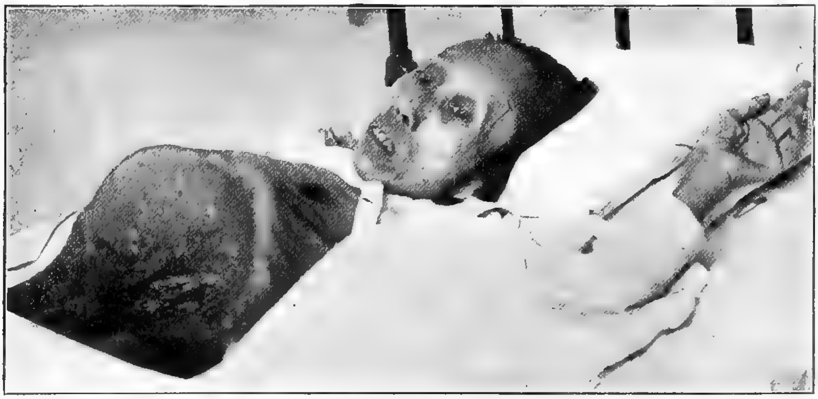

FIG. 260. Similar case after operation. Shows the hollow of the abdomen from removal of the tumor. (*By E. Reifsnyder, Shanghai.*)

There is no operation so uncertain as that for ovarian cyst. The cyst may be unilocular and free from adhesions in which case the operation is the simplest in surgery, and can be finished in a few minutes. At the opposite pole the cyst may be adherent all over to peritoneum, bowel, uterus, in Douglas' pouch and have burrowed between the layers of the broad ligament. Such a cyst will tax the powers of the best operator in the world. In the case of a simple cyst the abdomen is opened, the cyst tapped, emptied, and pulled out of the wound, the pedicle transfixed and ligatured, and the peritoneum caught over it with a stitch. The pedicle is then dropped back into the abdominal cavity, the ovary of the opposite side examined and the wound closed.

In cysts of enormous size, where the heart is displaced and the breathing seriously impeded, the cyst should be tapped and part at least of the contents removed a day or two before the operation. We have lost a case ourselves on the table from ignorance of this rule.

A mooted point in connection with the removal of these tumours is with regard to the advisability of tapping some days previously with a view of adjusting the circulation to the change of pressure and relieving pressure on the lungs; of tapping immediately before opening the abdomen; or of tapping after opening the peritoneum. The objection to the first is that adhesions are likely to form and interfere with the approach to the abdominal cavity. This is certainly true of those cases which have been repeatedly punctured, and Jefferys remembers operating with A. M. Myers (Shanghai) and having the difficulties of operation very materially enhanced by firm adhesions along the central line, due to frequent tapping by some other practitioner. There is also the danger of unnecessary (?) blind tapping and the possibility of severe hæmorrhage from puncture of a cavernous space, or other blood-vessel. We consider the practice of tapping these tumours in order to avoid radical operation absolutely unwarranted. If one is not in a position to operate, the case should be referred to someone who is, and not submitted to the danger of malignant development through delay or leakage, or other risk from this timorous practice.

The gain of previous puncture in steadying the circulation is certainly a large one. Puncture just before opening the abdomen has no recommendation, and is certainly more dangerous, since blind, than puncture after peritoneal incision. In most cases, puncture after peritoneal incision is the procedure of choice, when the fluid can be walled off from contact with the peritoneum, the stream guided, the puncture safely made, the site of puncture selected and the hole clamped immediately on removal of the trochar. This procedure is applicable in the case of younger women with no exaggerated anæmia and no special indication of cardiac weakness, and with the tumour short of extremity in size. The anticipatory puncture is applicable to other cases, where, the age being greater, anæmia present, the circulation impaired, and so forth, the power of the heart must be tested and the final result approached with less assurance.

Cases come to us from time to time where the cyst has been greatly damaged by a concurrent pregnancy and labour. In these patients adhesions are sure to be plentiful and inflammation of the cyst will have produced changes in its contents. In one such case under our care the cyst had lost all pelvic connections and derived its blood supply from large vascular omental adhesions. Part of the cyst wall was gangrenous.

In dealing with adhesions no trouble need be anticipated with anterior peritoneal adhesions which may be separated by sweeping the hand over the front of the cyst between it and the abdominal wall.

Firm adhesions with the bowel are always important and must be carefully dissected off, it being better to leave a small portion of the cyst wall attached to the bowel rather than run any risk of damaging the gut. Such pieces left behind should be scraped with a spoon to remove the actual inner lining of the cyst. Probably the most difficult adhesions of all to deal with are dense adhesions in Douglas' pouch, to it and to the rectum; occasionally here too a portion of the cyst wall must be left behind. On one occasion we found it necessary to amputate the uterus on account of inseparable adhesions between it and the cyst wall.

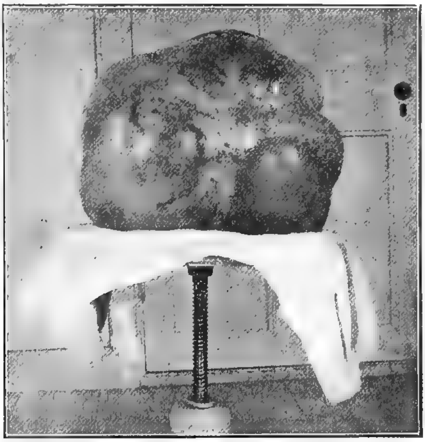

FIG. 297.—Ovarian cyst. Removed and inflated. (*By F. L. Draper, Singiu.*)

In the case of multilocular cysts of small size it is better to remove the cyst whole, if this can be done by reasonably enlarging the incision. In cases of very large cysts the largest loculus should be tapped and from this the trocar passed on into smaller loculi or the hand may be introduced inside the larger cyst and used to break up the walls of some of the smaller ones.

OBSTETRIC OPERATIONS.

General Considerations.—There is probably no detail of obstetrical practice that so impresses the physician when he reaches China as the almost complete absence of many of the commoner pelvic contractions that he has met with at home. Of course the explanation is quite a simple one and depends on the complete absence of rickets, at least in any severe form. Rachitic pelves are never met with in the Chinese. General contraction in a severe form is very rare but slight degrees of general contraction are far from uncommon, and it must be remembered that in a land where "forceps" are unknown and capable obstetricians absent, a slight degree of general contraction may prove a fatal obstacle to delivery, fatal alike to mother and child. Kyphotic pelves are met with in roughly the same proportion as at home, but what constitutes the worst condition for the obstetrician is where the vagina is a mass of cicatricial tissue resulting from sloughing or other damage in former deliveries. Transverse presentations especially with dead children are met with, and, owing to the fact that the foreign doctor is probably more often called in for these than other conditions, a rather false impression of the frequency of this mal-presentation is current. Placenta prævia calls for no special remark, it is met with in China as at home and requires the same principles of treatment. Twins are rare and it follows that monsters are extremely rare. That twins should be rare is not surprising. The Chinese are a very fecund race, whereas twins are usually considered the result of pathological fertility rather than true fecundity.

Are deaths in or from labour very excessive among the Chinese? The question is a very difficult one to answer. That there is an immense amount of preventable suffering and death there can be no question, but we doubt if the whole total of deaths is anything like as great as is often made out. Puerperal fever in a severe form is comparatively rare, and we have frequently seen cases recover with but few symptoms whom home experience made one certain would die of septic infection. We doubt therefore if the actual death rate is very high though easily preventable deaths are relatively very common.

Incomplete Abortion.—Abortion is common both from syphilitic disease and other causes. It is not rare to meet a woman who out of ten or more pregnancies has only had two or three living children. Abortion in foreign women the result of malaria is not rare.

It need hardly be said, then, that we meet with a fair number of incomplete abortions, often with extreme anæmia from prolonged hæmorrhage. The treatment of these is very simple. Dilate the cervix, curette the uterus with great gentleness, and plug for twenty-four hours with lint soaked in tinct. iodi.

Hydatidiform (Vesicular) Mole.—This is met with from time to time and usually the patients are at the last stage from hæmorrhage. The uterus should be emptied as quickly as possible, under an anæsthetic, with the finger (not the curette for fear of perforation) and plugged as before with lint soaked in tinct. iodi. Raising of the foot of the bed, with enemata or infusions and perhaps bandaging of the legs will probably be needed in these cases.

Tumors in the Pelvis.—These form a class of special difficulty as to treatment when the patients are first seen during labour.

Pelvic dermoids are the most common, and among the most difficult of these cases. We recommend opening and emptying the tumour per vaginam, followed by rapid instrumental delivery after which the tumour cavity should be drained. In a case of this nature under our care the opening closed again and the tumour suppurated. A second very free opening with careful curettage of the inner wall of the cyst proved completely successful in this case.

Mal-presentation.—Of the mal-presentations applying to us for help by far the most common is that of transverse presentations with prolapse of one arm, usually made considerably worse by active pulling on by the Chinese midwife. One might expect that decapitation would be often required for these patients, but this is quite contrary to our experience. Under deep chloroform anæsthesia internal version will be found practicable in almost all.

For the general operations for the reduction of the size of the fœtus we must refer our readers to the larger works on obstetrics, but the question of Cæsarean section must be more carefully considered. Cæsarean section is an operation which every surgeon in China must be prepared to perform at a moment's notice.

On the other hand, the need for the actual operation is one that will but seldom occur; the rules for its performance should therefore be clearly laid down. The operation itself though very dramatic is perfectly simple and no surgeon with a hospital and the most ordinary skill need be deterred from performing it.

The indications for the operation are, first and foremost, the presence of such obstruction in the passage, bony or soft, as make it impossible to deliver the child per vias naturales. The indication here is perfectly clear and there is no excuse for delay. Where children can be born, but only after being destroyed, the indication is equally clear to obtain a living child, especially as premature induction of labour is very unsatisfactory among the Chinese who have little idea of how to care for a weakly child. We incline ourselves to go a good deal further than this. The operation with reasonable care exposes the mother to no more danger than a difficult delivery does. We doubt very much if anyone who has a hospital to take his patient into has any right to destroy the life of a child except in the rarest possible cases.

We believe that the perforation of living children is carried out far too freely in China, especially by foreign midwives who are not controlled in China by the laws which regulate their work at home. Such methods cannot be too strongly deprecated.

The indications, therefore, that guide us in the performance of the operation are simply the presence of a living active child which cannot be born as such by the usual passages.

Are there any other operations which take the place of abdominal Cæsarean section? We reply, not at present in China. Symphysiotomy, pubiotomy, etc., are out of the question for women who in a week or two at most must resume their ordinary daily work. Vaginal Cæsarean section is the operation of a specialist and few of us can claim to be that.

We shall give the operation for **Cæsarean section** in detail as we perform it ourselves.

The patient having been anæsthetised and the abdomen prepared, an incision is made in the median line from just above the umbilicus to within 2 inches of the symphysis pubis, opening the abdominal cavity through the whole extent of the wound. The uterus is lifted right out of the wound, which must be enlarged upward if need be to accomplish this. The abdominal wall is drawn together behind the uterus and large pads so packed round its neck that no fluids run back into the peritoneal cavity. The uterus is steadied by an assistant standing between the operator and the patient's head. A small vertical incision is now made commencing at the summit of the anterior surface of the uterus and deepened till the membranes are reached, no attention being paid to bleeding. A finger is introduced and on the finger the incision is very rapidly enlarged, with scissors, downward in the median line, till it measures about 5 inches in length. Bleeding now is furious, but, if assistants can be trusted, it can be absolutely controlled by one assistant on each side seizing the edge of the wall of the uterus as it is divided between the first finger and thumb of each hand, thus compressing the bleeding sinuses and vessels. The membranes are now torn through, the child seized by one leg and rapidly extracted, the cord is tied at once and cut and the child handed over to another assistant to look after. The placenta and membranes are shelled out at once.

The assistant steadying the uterus is now made responsible to see that it contracts well and no hæmorrhage occurs; this is very easily accomplished by the use of sterilized towels wrung out in very hot water, in one of which the assistant wraps the uterus changing it for another when the first cools, and occasionally if necessary kneading the uterus. The surgeon now sutures the wound, taking care to get the edges well apposed, the sutures passing through the peritoneal and whole thickness of the muscular wall; about six sutures will be required. A hypodermic injection of some form of ergot is given and the uterus is dropped back into the abdominal cavity. The external wound is sutured with a single layer of stitches going through the whole abdominal wall. The operation should not take more than twenty minutes. About once in three cases the placenta will be met with in the line of the uterine incision. In this case it should be divided with the uterine wall and the bag of membranes thus directly opened from the first. The danger of the operation is not increased by thus incising the placental site, though of course the amount of blood lost is considerable. The operation as we perform it requires an abdominal incision of considerable size. The length of this may be considerably reduced by incising the uterus *in situ*. We do not, however, think that a somewhat increased incision is of great importance, whereas by the method we recommend the whole operation is performed extra-abdominally. It should be noted with care that in dividing the uterine wall the incision should stop short of the lower retracting segment, otherwise some hæmorrhage not easily controlled may be encountered.

Where the contents of the uterus are already septic the body of the uterus should be amputated, but we believe that the cases where this is actually required are few. Where the operation has been planned beforehand, as in cases previously dealt with by craniotomy, the section should be performed a day or two before the time when labour is due. The absence of preliminary pains affects in no way the effective contractions of the uterus.

It is wise, however, before suturing the uterine wall to pass a sound through the cervix to ensure the easy patency of that canal.

Retention of the Placenta.—This after the delivery of the fœtus is one of the conditions prone to happen in a land where there is no knowledge of how to deal with adherent placenta. It is a serious and probably not a very rare complication. Usually the placenta comes away in the course of a day or two, but in cases of strong adhesions the afterbirth may remain in the uterus for a considerable length of time. Douthwaite reported a case where a placenta was retained for thirteen days in the uterus, the midwife having broken the cord off short while pulling on it. In this case the woman recovered. But in our experience most of such cases die of septicæmia. If not seen for a day or two after the child has been delivered the contraction of the internal os may be extremely firm. Even under an anæsthetic it may be impossible to dilate the constriction with the hand and artificial dilatation may have to be employed.

Puerperal Fever.—The number of women who die of puerperal septicæmia must be large, but the number who do not die from septic conditions which would prove fatal to the women in western lands is still more striking. Sepsis in delayed labour is due to the filthy fingers of the midwife, the decomposition of the fœtus, and especially to infection spreading from the vulva. It must be remembered that prolonged delay of the fœtal head in the pelvis causes œdema, often extreme œdema of the vulva and vaginal walls, and that in this condition superficial extensive tears are almost certain to take place when the child is born. It is almost impossible to keep these tears in œdematous tissue clean even with the most scrupulous care and without even an ordinary washing they quickly become septic with resulting sloughing of the vulva, and not infrequently of the vaginal walls.

For this condition we can only recommend douching with hot water containing izal, or some other non-poisonous disinfectant. Some patients survive even under these septic conditions, but undoubtedly not a few die.

CHAPTER XXII.

DISEASES OF THE EYE AND EAR.

I. Eye Diseases.

So far as we are aware there is no practitioner giving his entire attention to these specialities, nor indeed has there ever been one; in view of which fact and in spite of an enormous amount of eye and ear work already well done, it would be a mere pretence if one should attempt to cover these subjects with any thoroughness. On the other hand, there is hardly a physician practising in China who does not do far more in the way of ophthalmologic and aural practice than is ever attempted by the general practitioner at home. Some, indeed, as is the case in India, have given a considerable proportion of their time and attention to these matters.

> "Next in frequency to diseases of the alimentary tract are eye troubles."—*Coltman, Tsinan.*

It is probably not far from the truth to say that with the exception of entropia and trichiasis, broadly speaking, the eye diseases of China are **approximately normal** as compared with Europe and America. In saying which we note a marked contrast from India, Egypt, and other well-known Eastern fields of medical service. For example, cataract is not a prevalent disease. Every hospital does its quota of lens extractions, one or two a month or more or less; but there is no such record as that, for instance, of Wanlass, Miraj, India, whose numbers of senile cataract extractions for 1908 were 498; and this merely incidental to his regular surgical practice.

> "Unlike India, where we read of hospitals having 365 cataract cases in the year, it is a comparatively rare affection with us, and at most we see some six cases in a year, and only one or two of these will consent to operative interference."—*Stooke and Graham, Ichang.*

Of trachoma it might be said that it is common indeed, and exceedingly destructive. But there is no appreciation of it as a national scourge. It should be stated emphatically, however, that it is inexpedient at present for anyone to attempt to practise medicine in China without some special knowledge and study of ophthalmology, for the very reason that there are no specialists to whom this work can be referred. It is brutal and unscrupulous that anyone should attempt this delicate and important work without some special training and competence therefor. And there is no portion of it which will not repay careful and detailed attention.

There is an immense **field of usefulness** in China in the careful prescription for refractive errors. The land is much given over to books and study; the young are greatly crippled by myopia and the old by presbyopia: children, promising in every way, are baulked of their careers by threatened blindness: old men and women are laid on the shelf or put by for starvation because they no longer can see to ply their trades. Such a service as that rendered in Shanghai for many years by John Goddard, recently deceased, was a real blessing to the community. It was on a business basis. The doctor, though qualified for general ophthalmologic practice, devoted himself to refraction.

In the interior a certain amount of refraction is absolutely required of surgeons in prescribing for their cataract extraction cases and so forth. Test type is provided by the Presbyterian Mission Press in Shanghai, based on simple Chinese ideographs, and the paraphernalia for refraction should be in every hospital. We confess ourselves to have found the greatest satisfaction in the shadow test, both because of the fact that such a large proportion of the native population is illiterate and because the method is more reliable in most cases than the answers which can be abstracted by the tedious and maddening process of character recognition. When once mastered the shadow test is enormously satisfactory, and is a time saver—a great blessing to the surgeon.

Running briefly over the more important eye affections:

Alcoholic and tobacco amblyopia are not met with. Little alcohol is drunk, and the native tobacco is mild. The rapid introduction of cigarette smoking will, however, change the conditions speedily, Conditions due to anæmia may be looked for fairly commonly.

Ankyloblepharon and symblepharon are often encountered as the result of lime, acid, and hot-water burns.

"The picture is of a man . . . , both eyelids were grown together. On the right eye was an opening the size of a pin through which the man saw. He told us that some years ago he had been attacked by robbers who bound him and then laid him on his face in lime. He would not allow me to operate."—*Eich, Tungkun.*

The arcus senilis is excessively common and often greatly exaggerated in the Chinese.

Astigmatism, see refraction, above.

Blennorrhœa neonatorum and of the conjunctiva and lacrimal sac are all common.

Of cataract, almost all forms are found in about normal proportion.

Perhaps soft cataract has appeared to us unduly prevalent, and traumatic cataract is very common.

Tumours of the choroid are not seldom met with. Disseminated choroiditis is fairly frequent.

Conic cornea is frequently reported from all parts of China.

The bacteriology of the conjunctiva, according to studies made in St. Luke's Hospital, shows the following findings:

"A Bacteriological Report of Smears From Two-hundred Cases of External Ocular Infections in Shanghai, 1907.

Bacteriological findings	Conjunctivitis acute	Conjunctivitis chronic	Conjunctivitis purulent	Conjunctivitis with corneal ulcer	Trachoma	Grand total
Koch-Weeks bacillus	41	2	1			44
Morax-Axenfeld diplobacillus	3	17		13	1	34
Gonococcus	2		7	9		18
Pneumococcus	2		1	1		4
Staphylococcus	4		1	2		7
Mixed infection: Morax diplobacillus, Staphylococcus	2	1		1		4
Mixed infection: Morax diplobacillus, Weeks' bacillus	4	4		5	1	14
Mixed infection: Morax diplobacillus, Streptococcus		2		5	1	8
Mixed infection: Morax diplobacillus, Gonococcus			1	1		2
Mixed infection: Morax diplobacillus, pneumococcus		1		1		2
Mixed infection: Pneumococcus, streptococcus	3		1			4
Mixed infection: Pneumococcus, Weeks' bacillus	3		1			4
Mixed infection: Pneumococcus, staphylococcus	1			1	1	3
Mixed infection: Weeks' bacillus, diplococcus (unidentified).		2			2	4
Unidentified diplococcus	2				1	3
Negatives	22	3		19	1	45
Total	89	32	13	58	8	200

"From the bacteriological findings as tabulated above the following conclusions may be drawn:

"*Firstly.*—In the 200 cases, pure infection with Weeks' bacillus was found forty-four times, occurring forty-one times in acute conjunctivitis and none in corneal affections. Judging by this evidence, it may therefore be concluded that Weeks' bacillus is not prone to attack the cornea.

"*Secondly.*—Under the column of chronic conjunctivitis the diplobacillus of Morax and Axenfeld occurred seventeen times in pure infections, whilst it was found in only three cases of acute conjunctivitis. It thus appears that the diplobacillus is largely responsible for the chronic form of conjunctivitis, specially that in which the palpebral conjunctiva is affected. But it is not justfiable to warrant the conclusion that this organism is the causative factor of corneal ulcerations, although it was also found in thirteen cases of conjunctivitis with the involvement of the cornea, because no measure was taken to differentiate it from the closely related organism described by Rochat. The latter might have been present in those thirteen cases since it bears a great resemblance in morphology.

"*Thirdly.* Gonococcus seems to play the most prominent part in the ætiology of purulent conjunctivitis, and it also appears to be no less virulent than the other pyogenic bacteria in the destructive production of corneal lesions. Of the fifty-eight cases of corneal ulcers it was found in nine in pure infection. It may be safely added that Morax diplobacillus, while found generally in cases of subacute conjunctivitis, with recurrent corneal ulcers and gonococcus, more often occurred in virulent conjunctivitis with extensive ulceration of the cornea.

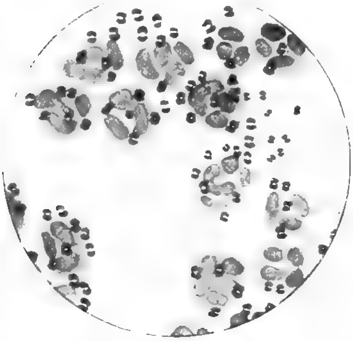

FIG. 298. Gonococcus, × 950. (*Hansell and Sweet.*)

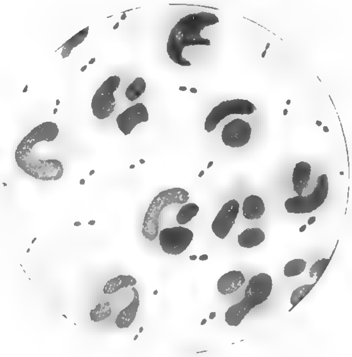

FIG. 299. Pneumococcus, × 950. (*Hansell and Sweet.*)

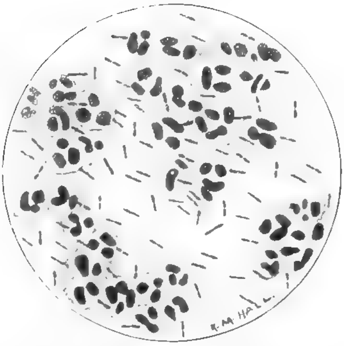

FIG. 300. Bacillus lacunatis (Morax-Axenfeld), × 950. (*Hansell and Sweet.*)

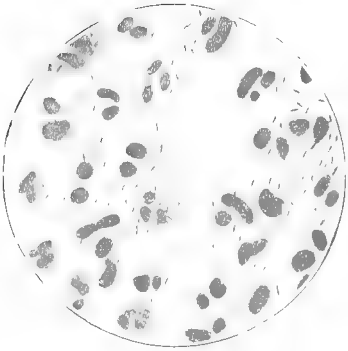

FIG. 301. Koch-Weeks bacillus, × 950. (*Hansell and Sweet.*)

"As regards the mixed infections and the eight cases of trachoma nothing special is worth mentioning, as the number of cases in which the various types of bacteria were found on the same smear are too few for consideration. In order to deduct absolute conclusions a much larger number of cases should be examined than in the series here presented. In presenting the foregoing conclusions we should be unwarranted in drawing any positive conclusions as to the particular form of ocular affection always dependent upon a particular type of organism.

"We offer the above bacteriological findings and the conclusions drawn from them with the realisation that they have value both because they respesent, we believe, the first careful study of this question made on Chinese soil and at least serve to identify certain well-known micro-organisms as pathogenic in China.

E. SINDED TYAU, M. D.

The following selections from a paper by T. H. Bulter, on "Ophthalmia in the East (Palestine)," published in the *Royal London Ophthalmic Hospital Reports*, Vol. XVII, Part I, are worth noting here:

"I have classified the simple ophthalmia cases into endemic or winter cases, and epidemic or summer cases.

"I have separated the simple cases from those complicated by corneal ulcers. I have also reserved tables for severe and slight ulcers, and for very chronic cases.

"Simple Ophthalmia—Endemic Period.

	Per cent.
"Morax-Axenfeld diplobacillus	18.3
Koch-Weeks bacillus	18.3
Pneumococcus	18.3
Mixed infection	16.7
Gonococcus	8.4
Sterile	20

"Acute Ophthalmia—Epidemic Period.

	Per cent.
"Koch-Weeks bacillus	66
Pneumococcus	22
Mixed infections	6
Morax-Axenfeld diplobacillus	4
Gonococcus	0
Sterile	2

"It is evident that the Koch-Weeks bacillus is chiefly associated with the epidemic.

"The gonococcus does not appear at all in simple acute ophthalmias, because in the epidemic period it is so virulent that it always attacks the cornea.

"Severe Ulcers Examined During the Whole Year.

	Per cent.
"Gonococcus	40
Mixed infections	25
Pneumococcus	15
Koch-Weeks bacillus	10
Morax-Axenfeld diplobacillus	5
Sterile	5

"Twenty-three slight ulcers which readily yielded to treatment were examined with the following results:

"Slight Ulcers—Examined During the Whole Year.

	Per cent.
"Mixed infections	30.4
Pneumococcus	26.1
Koch-Weeks bacillus	21.8
Gonococcus	8.7
Morax-Axenfeld diplobacillus	4.3
Sterile	8.7

"The table shows that a mixed infection is much more likely to attack the cornea than a simple infection (with the exception of the gonococcus).

"Prognosis.

"Prognosis is generally good in Koch-Weeks infection if the eyes come under treatment at once. The same is true in a slightly less degree of the pneumococcal infection, but there is much greater danger to the cornea.

"Infections with the diplobacillus of Morax-Axenfeld are rarely severe, and seldom attack the cornea. They are apt to be very chronic, but generally yield to solutions of zinc sulphate or chloride if applied in sufficient strength.

"A mixed infection containing the diplobacillus is generally very chronic and resists treatment.

"In a gonococcal infection the prognosis is always bad and generally very bad.

"Treatment.

"Protargol was found to be very superior to argyrol in therapeutic action, and argyrol and silver nitrate were found to have an equal action.

"Since making tests I have used protargol almost exclusively in the treatment of ophthalmia.

"The eye should only be tied up when there is a corneal ulcer, and the discharge has ceased.

"The eye should be frequently irrigated with either 4 per cent. boric lotion or 1–5,000 sublimate solution. The mucoid strings that constantly form act as foreign bodies, and must be washed out.

"Once a day the lids should be swabbed with a 33 per cent. solution of protargol, and a good excess should be left in the eye, so that it may reach the bottom of the folds of swollen conjunctiva. The protargol is best applied with a pellet of sterilised absorbent wool held in catch forceps.

"A collyrium of 5 per cent. or 10 per cent. solution of protargol should be used every two, three, or four hours according to the severity of the case.

"If one eye be unaffected it should, for prophylactic reasons, be treated with 5 per cent. protargol solution.

"A modified protargol treatment should be continued for ten days after the disease has subsided, otherwise a relapse is likely to occur.

"As soon as the discharge has ceased, the collyrium may be replaced by a vaseline ointment containing 5 per cent. of protargol.

"If the diplobacillus of Morax-Axenfeld be present, zinc should be used after the first few days. Zinc sulphate can be mixed with protargol solution if necessary. I do not think that in Palestine a weaker solution of zinc sulphate than 1 per cent. is of much use, and I have used 2 per cent. with great advantage. I have used the 1 per cent. solution in cases of corneal ulcer of diplobacillary origin with good effect.

"All cases which become chronic should be microscopically examined and, if the diplobacillus be detected, zinc sulphate or chloride should be energetically used till the case improves.

"Most cases of ophthalmia which have lasted a month or more require finishing off with mercuric oxide ointment in 1/2 to 1 per cent. strength. They often derive great benefit from the gentle use of the alum-copper sulphate pencil used on alternate days. I have tried permanganate of potash in 10 per cent. solution in the treatment of acute ophthalmia. I found it to be painful and ineffective. As soon as the cornea is implicated, atropine should be added to the collyria and ointments. If there be a discharge present, the following is a useful formula:

"Protargol,	5 parts
Atropine sulphate,	1 part or 0.5 part
Distilled water,	100 parts

To be used three times a day.

"If there be no discharge, the following ointment is very useful:

"Protargol,	5 parts
Atropine (alkaloid),	1 part or 1/2 part
Yellow vaseline,	100 parts

To be gently massaged in three times a day.

"I am convinced that protargol exerts a most favourable influence upon the healing of corneal lesions.

"If there be no discharge, the eye should be tied up as soon as an ulcer is detected.

"If the floor of the ulcer be covered by a slough, a little iodoform may be dusted in once or twice a day.

"If in spite of treatment with protargol and atropine the ulcer neither gets better nor worse, and there be not much injection, calomel may be dusted in once a day, and an ointment containing 1 per cent. of atropine and 1 per cent. of yellow oxide of mercury may be massaged in twice a day.

"If, however, the ulcer begin to spread or to deepen, no time should be lost in using the actual cautery or in applying pure phenol.

"If there be an area of infiltrated cornea in advance of the ulcer, this area should be relentlessly destroyed, even if the cautery reach Descemet's membrane. The resulting leucoma will be far smaller than that left by the ulcer if it continue to advance."

Every form of **conjunctivitis** is found that we know of. Phlyctenular is the prominent variety, and is largely associated with disease of the nasal mucous membrane, without treatment of which permanent results in the eye cannot be expected.

"An epidemic of conjunctivitis in the American Presbyterian boys' boarding-school caused its temporary break up, and from films would have seemed due to the diplobacillus of Morax. The Chinese doctor in attendance stated, that if neglected, this apparently simple inflammation was frequently fatal; no cases were fatal as far as we could hear."—*Cole*, *Ningpo*, 1905.

"Next comes (conjunctivitis) 2,375 cases in '87. Other eye diseases deserving mention are blepharitis marginalis (inflammation of edges of eyelids) 724 cases, keratitis (inflammation of the cornea) 635 cases, and entropium 446 cases. These diseases are all more or less due to filth, impure air, want, and neglect. There is a great difference between an eye clinic in America and one in China. There, so many patients come for asthenopia and accidents of various kinds. Here, such cases are rare." —*Park, Soochow.*

"Xerosis conjunctivæ is a disease frequent in tropical and subtropical countries * * * a severer form complicated with keratomalacia is frequently observed in the native quarters of tropical towns, such as Bombay, Calcutta and Hongkong."—*Scheube, p.* 580.

Gonorrhœal conjunctivitis, see Chapter XX.

Our colleague H. W. Boone reports **ulcer of the cornea** as particularly frequent in the Chinese. This is probably owing to general bad hygiene. The implements used by the Chinese to wipe their eyes are sufficiently filthy to warrant any form of local infection old rags, bunches of straw, finger-nails, and the like, all come under this heading. Many cases of ulceration of the cornea are aggravated by a native remedy, which appears to be a vegetable powder, called ch'ün lin san, and many cases of incurable blindness here may properly be attributed to inflammation aggravated by this powder.

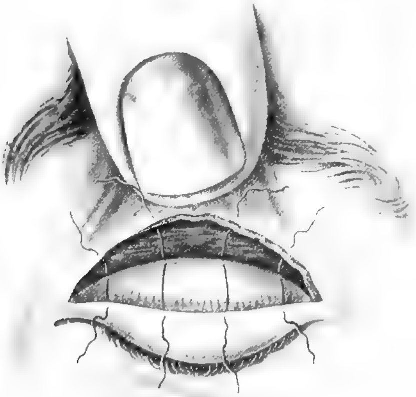

Fig. 302. Anagnostakis-Hotz operation Incision and sutures. (*From Hansell and Sweet, Diseases of the eye.*)

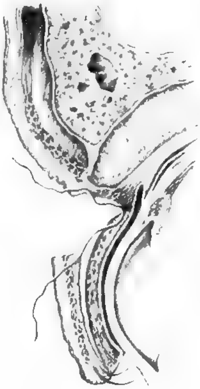

Fig. 303. Anagnostakis-Hotz operation. Vertical section (*From Hansell and Sweet.*)

Distichiasis and trichiasis, as well as ectropion and **entropion,** make up the greater part of eye work for the average practitioner. Entropion is one of the commonest operations we are called upon to perform in China. J. L. Maxwell, Formosa, does as many as 500 per year. As in the case of piles and fistula and phimosis, it is therefore well worth the surgeon's while to learn to do it with the utmost skill and the utmost comfort to the patient. It may be unimportant for a surgeon in China to know how to do a gastrectomy, but if he cannot do an entropion with satisfaction to his patients, he had better pack up his books and go home.

The **operation** which we all but invariably do for entropion of the upper lid is that of Anagnostakis and Hotz.[1] There is no operation in surgery which compares with this for the radical cure of moderate degrees of entropion with trichiasis. The following are the special methods of application which we would suggest as tending to render the operation as painless and comfortable as possible. In the first place, horsehair is by far the most comfortable suture material, as well as the most satisfactory. Unless it is particularly good and strong, we make the central stitch a double one. We put three stitches, to include the upper edge of the cartilage and usually two beyond the cartilage on each side. On the inside stitch of all, however, care must be taken not to include the upper lacrimal canaliculus. The ends of all the stitches are left long, are brought to a point over the prominence of the frontal bone (externally, of course) and there, by rolling them between the fingers, so manipulated that an even tension is made along the whole width of the wound margin. The lid, by drawing evenly on the whole bunch of stitches, is very slightly raised and a band of adhesive plaster made to fasten the whole bunch together to the forehead. The wound, after being thoroughly dried, may be sealed with a very small strand of cotton wool and collodion; or a light boric ointment pad laid upon it. There is no objection to a slight inflammatory reaction as the scarring and consequent retraction will assist in the final result of the operation.

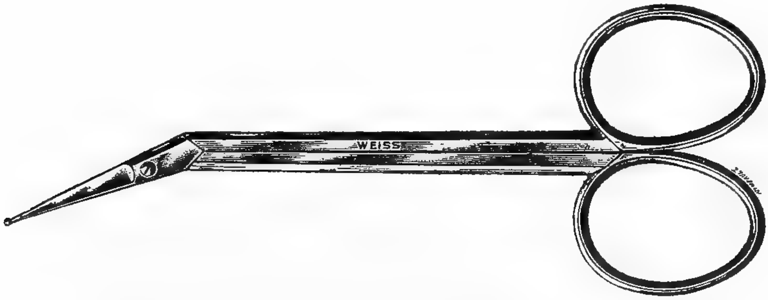

FIG. 304.—The best form of scissors in operation for entropion. (*After Weiss' catalogue.*)

In operation of the lower lid, the same manipulation of the stitches may be carried out, in this case fastening them to the prominence of the cheek.

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[1] *American Text-book of Diseases of the Eye*, p. 549.

Points of the treatment:

a. According to the comfort of the patient, the inflamed conjunctiva can be lifted as high as is desired by increasing or relaxing the tension of the stitches. The object of the operation may be considerably assisted by this tension, which helps to turn the lid outward.

b. Treatment of the eye may be carried on during the healing of the wound.

c. The horsehair stitches are prevented from burying themselves, and, on account of their slippery surface, may be removed absolutely without pain.

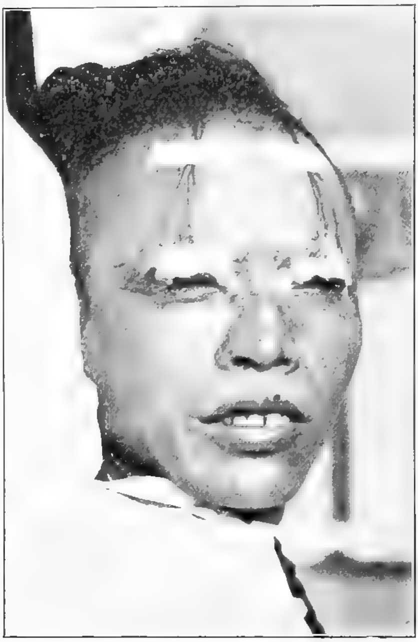

FIG. 305.—An excellent dressing for entropion operations. See description. (*By Jefferys.*)

It sounds like a small matter, this control of the eyelid by the tension on the stitches, but the greatest satisfaction is constantly expressed by the patient over the same.

While on this subject, a point well worth remembering is that a very careful and thorough epilation of the troublesome lashes a few days before the operation and the constant washing out of the conjunctival sac will greatly lessen the discharge and add much to the comfort of the patient—so much so that at times he will think himself about cured and balk at operation. This, however, may be obviated by not prolonging the delay too far.

"Our troubles with the first dressing of entropion operations have been ended by using a couple of narrow strips of rubber protective tissue that has been previously washed and stored in 1–1,000 bichloride. This prevents the gauze from sticking to the wound and pulling out the stitches, to say nothing of the bleeding that usually follows without this precaution. It saves a lot of time also and perhaps some temper." —*Logan, Changteh.*

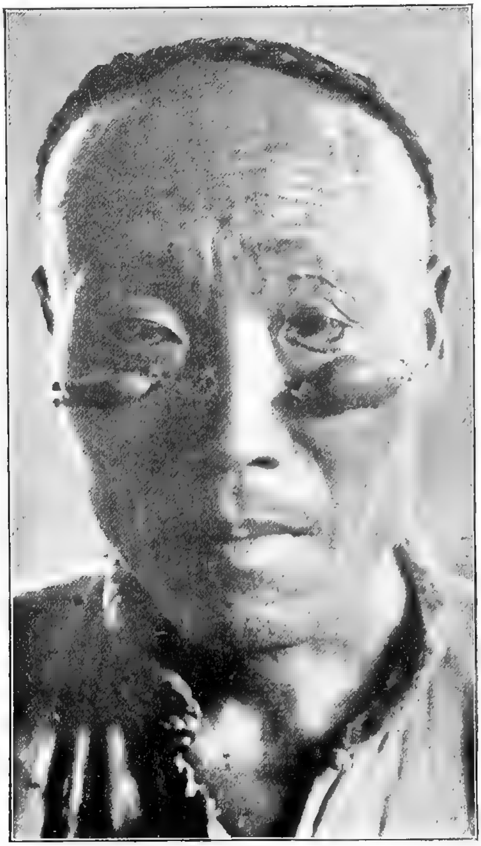

Fig. 306.—Native Chinese operation for lower-lid entropion, pinching the skin between two small sticks. In this case the compression was not complete and two curious tumours resulted. (*By Jefferys.*)

The operation for entropin is one of the very few surgical operations performed by the surgeons of the old Chinese school. The usual method employed is to pinch a fold of skin between two small bamboo sticks about the size of matchsticks and tightly binding the two overhanging extremities of each pair of sticks in such a way that the fold of skin is strangulated and drops off.

The photograph shows the method as applied to lower lid entropion of both sides. The only reason the patient presented himself to us was that he did not get his sticks tight enough and there was sufficient circulation to keep the constricted part alive; with the result that a tumour-like congested and inflamed mass developed which refused to die and gave considerable annoyance in the course of its short career. It was an easy matter to snip off the two masses, when healing promptly took place with pretty fair results as far as the entropion went. Of course the objections to the operation are numerous. It is clumsy, painful, slow, scar-producing, liable to either fail in its result or succeed too well, causing lacrimation.

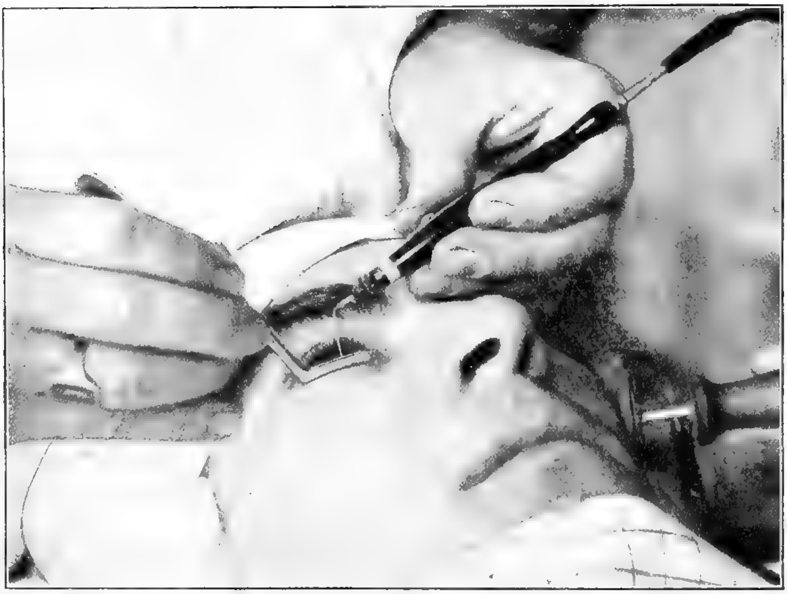

FIG. 307.—Electrolysis of cilia. (*From Beard's Ophthalmic Surgery.*)

The operation is performed in the same way to the upper lid and sometimes prevents closure of the eyelid.

For distichiasis and trichiasis, as an auxiliary to more radical procedures, the galvanic platinum needle with a twelve-celled battery should be on hand, and will gracefully complete otherwise imperfect results, as well as prove useful in other ways in hospital work.

"Our galvanic battery with the needle attachment for destroying hairs is in very frequent use. It takes time, but many of our Chinese are blessing us for this exquisite instrument of torture which destroys the roots of offending 'wild' hairs. In using it, I find it necessary to stand behind the patient, bracing his head against my gowned body to keep him from jerking the needle out when the current is turned on. After entropion operations, in very bad cases, it will often be necessary to remove a few offending hairs by this method." *Logan, Changteh.*

Exophthalmos in connection with goitre will be occasionally found.

Of **glaucoma**,[1] the acute and the chronic are both found, especially the latter, and they are typical in all respects. Maxwell (Formosa) finds the acute very rare, but the chronic common in the south. But until blindness threatens they are never referred to the foreign surgeon, and therefore no satisfactory results may be expected, and certainly none should ever be promised.

Iritis is of course common. Hypopion may frequently be looked for. Olpp reports three cases. Iridocyclitis is an important subject, but in China is according to rule. It is constantly presented for treatment.

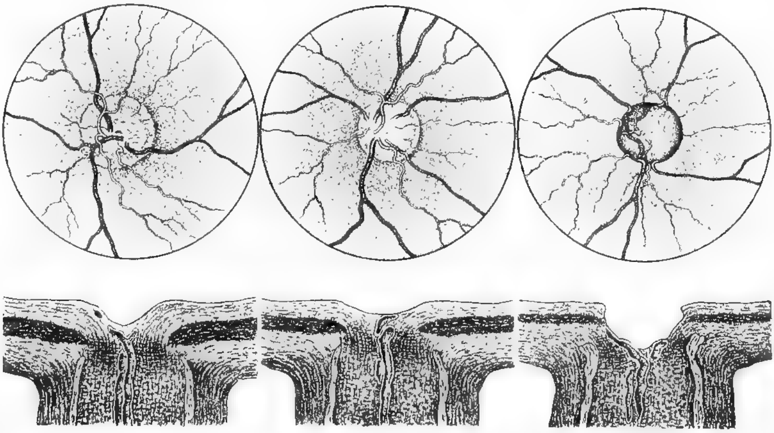

FIG. 308.—Cupping of the optic nerve. 1, Physiologic excavation; 2, Shallow cupping in optic atrophy; 3, glaucomatous cupping. (*Hansell and Sweet's Diseases of the Eye.*)

Neuroparalytic forms of **keratitis** are not uncommon, *vide* a very interesting case reported by Butchart, of Lucheofu, and associated with a marked chronic eczematous condition of the same side of the scalp and face and ear, of which the chief feature was intolerable itching.

"A case of iridocyclites and keratitis punctata in a boy. As no stigmata of inherited syphilis were present, a tubercular origin of the trouble was suggested." *Huntley, Hanyang.*

Canaliculus obstruction with mucocele, with fistula, and with serious infection of the conjunctiva and eyeball are all excessively frequent and usually due to injury followed by infection. Traumatism may be very slight or may involve fracture of the maxillary bone. We have had excellent results from resection of the lacrimal sac and prefer it in the poorer patients. Dilatation with sounds is easily tolerated under anæsthesia, local or general; but it should not be done with Bowman's, but rather rapidly with larger instruments. And either silver-gilt styles should be inserted, or the equally good simple lead wire, such as is used for electric fuses. We vastly prefer the latter ourselves, as being softer and more comfortable. The Chinese make no objection whatever to styles.

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[1] This opinion about frequency is not universally held. Coltman (Tientsin) states that it is very infrequent in China. Perhaps this is so in the north.

"To ensure the complete success attention to detail is essential in three particulars:

"1. The lower canaliculus must be slit right up to its entrance into the sac, otherwise the uncut portion will be torn in inverting the style and trouble will follow.

"2. The canaliculus must be divided exactly in the centre, otherwise the horizontal limb of the style will be tilted either forward or backward.

"3. The length and size of the style and the length to horizontal limb must be chosen with some relation to the age and size of the patient. To insert a short style where a long one is indicated, or one with a long horizontal limb where a short limb ought to be used, or *vice versa*, is to court failure.

"These styles in silver, gilt, or gold can be bought from Messrs. Doun Bros., Messrs. Arnold & Son, and Messrs. Weiss & Sons."—*Corning*.

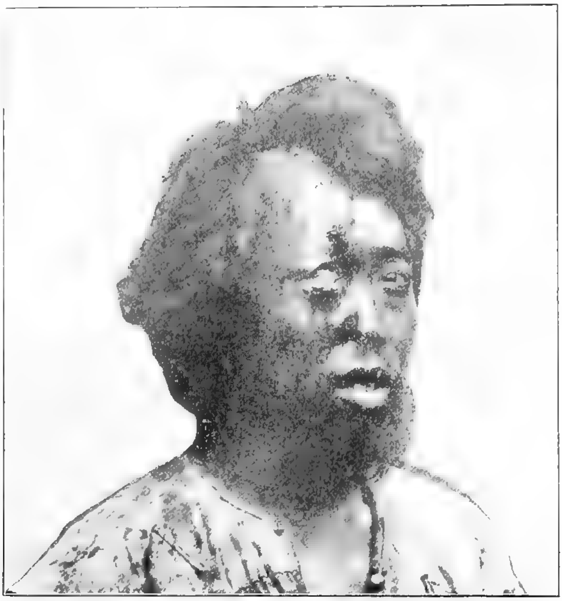

FIG. 309.—Trophic dermatitis. (*By J. L. Butchart, Luchoufu.*)

Migraine associated with an ophthalmic aura has been reported by Maxwell and others.

Syphilitic optic neuritis is common; retro-bulbar has recently been reported by Fearn.

We do not ourselves remember having seen a single case of nystagmus, but others have seen it.

Pannus is extremely commonly met with and can be often aborted by a prompt operation for ectropion followed by epilation and subsequent conjunctival treatment. We have seen pinguecula, and, as for pterygium, it is ever with us.

> "We have treated much the same kind of cases as in former years. The 144 operations for *entropion* and seventeen for *pterygium* were nearly all performed by Mr. Chu, and the result has almost invariably been excellent."—*Cochran, Hwaiyuen.*

Retinitis, albuminuric, pigmentosa, and syphilitic, are all found.

Sympathetic irritation, and worse, ophthalmitis, are among the most discouraging conditions we meet with in China. It seems almost impossible to explain the matter convincingly to the Chinese mind. As long as there is any vision in an eye, no matter how diseased, it is rare that we can obtain permission for enucleation. (J. L. Maxwell, Tainan, does not experience this difficulty.) Occasionally consent may be obtained in cases of phthisis bulbi. But the surgeon in China may expect to see many a good eye destroyed from sympathetic ophthalmitis when there is ample time and every hope that they might be saved if only consent for operation could be obtained. It is worth the expenditure of the utmost tact and patience in this matter; and yet one must avoid the fatal error

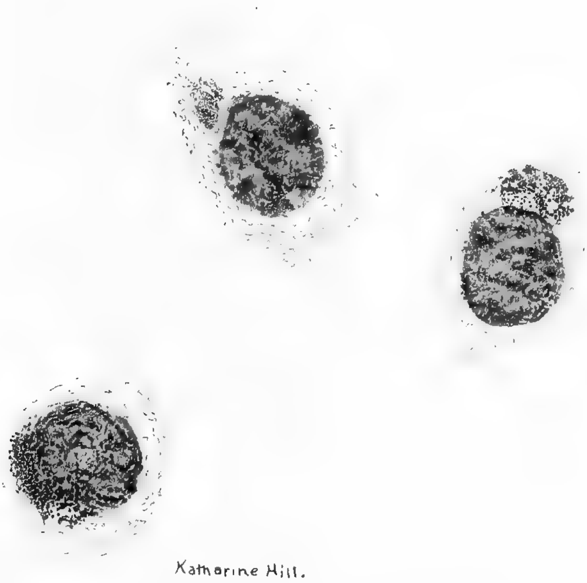

FIG. 310.—Trachoma bodies of Prowazek-Greeff. (Giemsa stain.) Courtesy of Dr. Brown Pusey. (*From Webster's Diagnostic Methods.*)

of promising that the irritated eye will be saved by operation. The surgeon should never allow himself to become forgetful of the existence and importance of sympathetic disease in China.

Trachoma is according to rule. It is excessively prevalent, excessively destructive, found in all classes from the lowest to the highest. It is curable, and satisfactorily so. We have not ourselves the slightest use for Knapp's roller forceps: they spread more infection and do more destruction than they save. Protargol, puncture, and patience are the sovereign remedies. Glycerin and tannic acid is also very useful.

"Blennorrhœa and trachoma are remarkably frequent. * * * The Chinese and Japanese, however, are supposed to possess the greatest predisposition to the disease." –*Scheube, p.* 580.

"Chronic granular conjunctivitis is very common here, with all of the injurious sequelæ of that disease; but most of the cases that come to us have been made worse by the patients' having first treated their own eyes with native medicine. These cases usually improve rapidly under ordinary astringent applications. This native treatment method combined with bad hygiene also brings us many cases of hypopion, which I have always found exceedingly hard to cure until I discovered recently the efficacy of sodium salicylate internally in addition to the usual local treatment. Intestinal worms are a common cause of blindness in children; the whole unhealthy condition being usually traceable to neglect, ignorance, and filth on the part of the parents. A vigorous course of anthelmintics combined with good food and cleanliness never fails to arrest the disease promptly."—*J. M. Bixby, Kichyang.*

We have reported one case of xerophthalmia, associated with xeroderma pigmentosa, and Maxwell (Formosa) reports several.

A few special words on **the operation for senile cataract in China.** If both eyes are blind there is perhaps not sufficient reason why we should not follow the Indian method of letting our cataract operations go without bandaging. But where this is not so, the Chinese will not keep his eyes shut. On the contrary, he will open and scratch or massage the operated eye as surely as he has been operated on, and no Chinese could possibly resist the temptation to lift up a piece of gauze and have a look-see. He may do this, anyway, but the chances are much better if a light, firm bandage is over both eyes. It is worth while to spend time to explain, quietly and carefully, to the patient the conditions of operation and its after-treatment. The Chinese are intensely reasonable, quiet, and docile, and if they understand they will respond. Our own record of lens extractions is a modest one compared with the Indian surgeon's, but we have not yet lost vitreous or had permanent prolapse of the iris in a cataract extraction; which merely means that the Chinese are not nervous, they are patient, and quiet and reasonable, and determined to get back their sight if any effort on their part can bring about the result.

It is just as well, in poor patients, to make them deposit the price of their glasses before operation as the moderate restoration of vision will often prove sufficient for their craving and they cannot afterward be brought to the expense of buying glasses. We remember one particular patient who came from a long distance with double cataract, and after the first was removed, without waiting for glasses or the other eye, stated that he could see enough to last the few remaining years of his life, and he was entirely satisfied. The Indian method of non-bandaging and its argument is expressed by J. W. Scales as follows:

"Immediate After-treatment of Patients Operated on for Cataract. (Without Bandage.)

"J. W. Scales (*Fr. A. M. A.*, June, 22, 1907) believes that better results are obtained and the patient is more comfortable if no bandage is applied after the extraction of a cataract. He makes an ample conjunctival flap in making his incision, which helps to prevent infection by its quickly closing the wound. For the first dressing he applies a double layer of moist bichloride gauze and protects the eye by the use of a wire screen applied over it. After six hours the gauze is removed and a drop of atropin solution instilled. The patient is permitted to sit up throughout the convalescence. He suggests the following reasons for not using a bandage:

"*First.*—The bandage interferes with natural drainage and brings about a retention of secretions which is to be avoided.

"*Second.*—The bandage interferes with uniform pressure on the wound and ball of the eye, such as would be maintained by the natural position of the lid itself.

"*Third.*—It creates a feeling of discomfort and restlessness, which interferes with the healing process in that it increases the involuntary mobility of the eye.

"*Fourth.*—It is a factor in producing entropion of the lower lid, which in many cases is exceedingly difficult to avoid.

"*Fifth.*—It is a factor in producing conjunctivitis, iritis, and cyclitis."—*The American Journal of Ophthalmology.*

The extraction in the capsule (Smith's operation) is apparently rarely used in China. A symposium published in *Medical Missions in India* gives a variety of results by Wanlass, Taylor, Campbell, Macphail, and Thomson.

"Symposium; Cataract Extraction in the Capsule.

"The following replies have been received to the request for opinions regarding the method of extraction of cataract without rupturing the capsule:

"Dr. W. J. Wanless, Miraj.—My opinion regarding Smith's operation for cataract is not yet finally settled. My attitude is at present friendly and I am doing the operation in most of my cases. I have recently got Allen and Hanbury to make me a lid elevator and an instrument for delivering the lens which I use instead of a blunt hook. These instruments, I think, have added to the simplicity of the operation. When I have done a few hundreds more and get time to compare results I shall finally decide whether to permanently adopt the operation. At present I am more pleased with the operation than I have been hitherto. For the man who does only a few cataracts in the year, I think he will do well to adhere to the capsulotomy operation, plus the use of intracapsular irrigation. I also use irrigation in Smith's operation when the capsule bursts in exit and cortex is left behind, as I have hitherto done in the ordinary capsulotomy operations.

"Dr. H. F. Lechmere Taylor, Jalalpur-Jatan.—I have done the intracapsular operation a good deal this year—probably 150 cases out of 280. I have careful notes of them and of those done by the old method, but I have not time to work them up in time for the October number. In any case the numbers are too small to make conclusions of much value.

"Dr. T. V. Campbell, Jammalamadugu.—In 1904, out of ninety-nine cataracts I removed twenty-three in the capsule, with an escape of vitreous in four cases. Finding that vision was no better in these cases than in those in which the ordinary operation was done, I and my colleague went back to capsulotomy and in almost every case used MacKeown's douche with excellent results. In 1905 and 1906 I removed ten in the capsule with an escape of vitreous in four. In 1907, out of 124 cataracts I removed twenty-one in the capsule with an escape of vitreous in eight. In most cases this was only a bead. I was away in 1908. In a total of fifty-nine cases of removal in capsule there was vitreous escape in nineteen (only considerable in four). I attempted to remove the lens in the capsule in many other cases, but desisted when it did not present after considerable pressure had been applied. I find the operation a risky one and one which requires a very good assistant. My percentage of vitreous escapes would be very much smaller if I had the same assistant all through. Our ten students assist us fortnight about in turn. I have noticed that when the lens in capsule is long in being delivered the corneal wound is apt to bulge afterward and be very slow in healing. In the ordinary operation during the same period my vitreous escapes was 5.8 per cent. in 375 cases. These included traumatic cataracts and cases complicated with old iritis and closed pupil. Nearly half the cases of vitreous escape occurred while I was removing a piece of opaque capsule with hook or forceps. I hope some time to learn from Major Smith himself how to do the operation properly. It was unfortunately the 'off season' when I visited Jullunder, and I saw only three cataracts removed.

"Dr. J. M. Macphail, Bamdah.—About four years ago I performed a series of 104 extractions in the capsule. In twenty-nine there was an escape of vitreous, and in four of these there was also rupture of the capsule, in three a prolapse of iris, in one suppuration, and in one hæmorrhage as well. In the previous list of 100 cases done in the ordinary way, there had been a loss of vitreous in five. Prolapse of iris occurred in seventeen of the 104 cases, in seven of the preceding 100. At that time Major Smith performed the operation without iridectomy, but he now does an iridectomy. The case that led me to give up Smith's operation as the routine method was one in which after the operation had been completed without difficulty or complication, vitreous began to well out of the wound, followed by blood. Since then I have confined the operation to specially favourable cases—those with a tough, opaque capsule, and cases of unripe cataract in which there is a good reason to operate before they are ripe. I have entirely given up the use of the cystitome, using the point of the knife for pricking the capsule. If the capsule resists the point of the knife, it is a suitable case for removal without rupture. My main objection to this operation is that so much depends upon the assistant. The most serious danger in cataract extraction is sepsis, and the more numerous the instruments and the operators the greater is this danger.

One does not approach the operation with the same confidence, knowing that everything may be spoiled by a very little and quite natural nervousness on the part of the assistant. In some cases I have managed all right by drawing up the upper eyelid with the left hand and applying pressure with the spatula held in the right. The spatula helped to keep the lower lid out of the way, and if counterpressure was necessary it was applied to the upper part of the globe by means of the upper lid. The operation is certainly a risky one, but in some cases its advantages are so obvious and so marked that it is advisable for operators who have many cases to become familiar with its technic.

"Dr. T. T. Thomson, Jammalamadugu.—Although fully conscious of my inexperience and mediocre results, I append the following table showing a comparison of vitreous escapes in my 245 cataract cases extracted by capsulotomy and expression in the capsule in my first three and one-half years' work, in the hope that it may prove instructive.

Year	Capsulotomy.	With iridectomy	Escape of vitreous			In capsule	With iridectomy	Escape of vitreous		
			Small	Medium	Large			Small	Medium	Large
1906 (from March)	68	68	3	3	1	13	13	1	3	1
1907	11	11	1	0	1	20	20	3	2	0
1908	56	56	3	1	0	18	17	3	1	1
1909 (to August)	33	22	1	0	0	36	36	6	1	0

Though often used,. the evidence is not conclusive of any advantage of Smiths' operation which would compensate for the undoubted extra traumatism, and danger of tearing the iris and ciliary body. The idea does not appeal to us at all. We are not in so great a hurry as to warrant it. In our own practice we never do an iridectomy. We always do a capsulotomy, and our results are thoroughly satisfactory.

"The pretty young woman from whom cataracts were removed had been given to her husband in marriage because he could not afford to acquire a wife who could see! His matrimonial venture, like some and unlike others, proved more successful than anticipated."—*Tucker, Pangchuan.*

We have referred to the frequency of **corneal ulceration,** the natural result of which is leukoma, and if perforation has taken place, anterior synechia. Consequently, iridectomy for optical pupils is one of the commonest of our operative procedures. Immediate favourable result need not be expected, as pannus is often present, and the cornea apt to become hazy where it appeared clear previous to operation. Time will improve matters considerably, especially with judicious treatment.

Treat the remains of the original condition treat the conjunctivæ bathe, cleanse, disinfect, perform operation for trichiasis if required, yellow oxide ointment, atropin, and rest.

Logan, Changsha, has called attention to the difficulty of judging the amount of iris to be excised or, rather, how to get just the right amount. If too much is taken, a certain amount of light can be readily shut out by tattooing with India ink, and the amount of tattooing estimated by testing the vision after painting out a certain amount of cornea with a good Chinese pen and ink rubbed up thickly. Logan also calls attention to the superiority of artificial light and a condensing lens, even over a skylight, for this iridectomy work.

II. Ear Diseases.

A brief mention of the two or three chief manifestations of aural disease in China will be sufficient for the purposes of this book.

Gerald S. Walton (Hankow) a number of years ago called attention to certain interesting deformities in the ears of the Chinese.

> "I have seen no very marked example of the little blunt point projecting from the helix supposed by Dr. Darwin and others to be a 'vestige.' The Chinaman's ear seems very uninteresting in that way. The most marked case was in a boy of seven. I have recently seen two pairs of ears that were interesting as regards their form. One pair was remarkably thin and parchment-like, a sort of ear you would put under the microscope to study problems in circulation. Another pair were also thin, but remarkable for their softness and the great depth of the concha. I call this the sow-purse ear and have seen another example of it, but not so marked." *Walton, Hankow.*

We have ourselves noted, and frequently have had verbal reports of, the prevalence of supernumerary auricles, and congenital clefts in the neighbourhood of the organ. These appendages are occasionally regarded as undesirable by women from a cosmetic point of view, but by men are universally held to be "lucky," and their removal is seldom asked for or permitted. In more enlightened Shanghai, however, this is not so true; the reference is from a Formosan report.

Some Sequelæ of Middle Ear Inflammation.

Ear surgery is not among the most satisfactory branches of practice even at home, and in China the conditions are particularly unfavourable. We see almost monthly exaggerated cases of aural polyp which, although surgically operable, we are now often refusing to treat because we cannot obtain the conditions necessary to success. These polypi have been uniformly large, that is, filling the whole middle ear and external auditory canal and usually protruding in such a way as to fill the concha as well. The tympanum is destroyed and the attachments of the polypi are so general and extensive as to render the use of the snare impossible. In most cases there is disease of the cartilage and of the bony walls of the middle ear, with, of course, partial or entire destruction of the ossicles.

In the past year we have seen about twelve of these cases. We cannot say that the ætiology of all is the same, though we believe it to be so, namely, an initial inflammation of the drumhead produced by the use of the instruments with which the Chinese barber cleanses the external auditory canal, a long pair of iron forceps, usually rusty and rough, a brush with a long handle, and a couple of small scoops of variable shapes. The instruments are, at least in some cases, handled with considerable skill and delicacy. The barber well knows how to draw back the auricle and illuminate the canal. He sees what he does and is gentle in his manipulations, as is evidenced by the fact that he gives no pain, but rather, on the contrary, the process is apparently enjoyed by the victim. We say victim advisedly, for we believe that this manipulation is a common cause for the train of evils of which the polypi described are a stage. The instruments are dirty to a degree; they are used upon one victim after another without any adequate purification and they are rough and crude. And what is of greatest importance, the practice would be deemed inadvisable, not to say dangerous, if carried out under the best conditions of cleanliness and care. The cleansing of the canal should never, as a routine, be performed with metal instruments. We have regularly put the question to these patients, "Do you allow the barber to cleanse your ears?" and in every case the answer has been "Yes." This is certainly significant in view of the fact that many Chinese do not allow the barber to do this, just as many of us are in the habit of restricting the barber's manipulations, preferring not to be too much fussed with.

The first case that presented we operated upon after dispensary hours, treating the man as an out-patient. *Cocaine* was used and the process was painless. There was considerable hæmorrhage, and we did not get the thing very thoroughly cleaned out. In spite of directions, the patient only returned twice for after-treatment, and this at too long intervals. Finally after a month or more he returned with the ear filthy and the growth larger than on his first appearance. He would not come into the hospital and we refused to treat him further as an out-patient.

The next patient that we undertook to treat was admitted to the wards and operated upon after a day or so. He complained before operation of pain under the jaw on the left side. This was the side of the polyp. There was some fever and some induration. The operation was more thorough than the last and the after-treatment could have been carried out fairly well, but the abscess under the jaw, for so it proved, assumed serious proportions and finally cost the patient's life. The operation on the polyp was done with *cocaine* and *adrenalin;* the instruments used were scissors, scalpel, curette, etc. The snare would not have been of any service. Two days following this operation we put the patient under *chloroform*, made a deep incision along the line of the lower jaw and another at an angle with it down the neck to meet the sterno-mastoid. The deep fascia was dark, and there was foul pus underneath it, which proved to come from the inner surface of the lower jaw bone, and when followed as high as possible was traceable to the parotid behind the tonsil. Rubber drainage was put in, but the patient succumbed to toxæmia. There was undoubtedly gangrene of the deeper tissues in front of the middle ear. This condition was developing at the time of the patient's admission to the hospital.

After these and other experiences we made the rule that we would only operate for this condition upon patients who would guarantee to remain in the wards for at least six weeks and who would be willing to undergo three or more operations if necessary. We have not often been able to obtain these conditions and have therefore not frequently operated since. At the words "six weeks" the patients rise from their seats and at "three or more operations" they may usually be seen on the horizon still in rapid motion. Willingness to submit to treatment extensive in time is harder to obtain than any degree of treatment in concentration.

Two cases, of more than passing interest, have come under our care which represent advanced stages of aural disease in Chinese, though neither probably followed the course of the cases of which the foregoing are types. One was the final result, as far as the mastoid is concerned, in a case of chronic mastoiditis. The patient was nine years old. The trouble began with catarrhal otitis media at about three months of age. It went through the stages of destruction of the drumhead, ossicles, cartilage, and mastoid cells in turn, finally perforating externally and forming a circular hole about the size of a small cigar. Inside the mastoid was hollowed out completely. The inner table was gone, and there seemed to be nothing but a shiny thin membrane between the cavity and the brain. There was a good deal of filth inside and some cheesy pus. An opening in the wall of the canal communicated with the ear in front, and an opening deeper in with the middle ear. One could see into the Eustachian tube. The patient was rebellious to treatment and all operative help was refused. The cavity was cleansed and studied carefully. Some slight hearing seemed still present on this side. We will not vouch for the fact, however. A flexible probe could have been passed through this round opening into the middle ear and down into the pharynx.

The other was the case of a middle-aged man with ear disease of one year's standing. The lower third of the auricle was ulcerated off and the margin formed a free sort of hook-shaped projection. The middle ear and the mastoid were freely exposed by ulceration and the posterior wall of the canal was gone, making a free but superficial groove leading from the canal into the mastoid cells. There was purulent discharge and some pain. It was foul and filthy. There was a vague history of some venereal trouble. In appearance the ulcerative process was syphilitic, and as there was rapid healing under local measures of cleanliness, combined with mixed treatment, we believe that this was the nature of the process. The condition when last seen by us was dry,

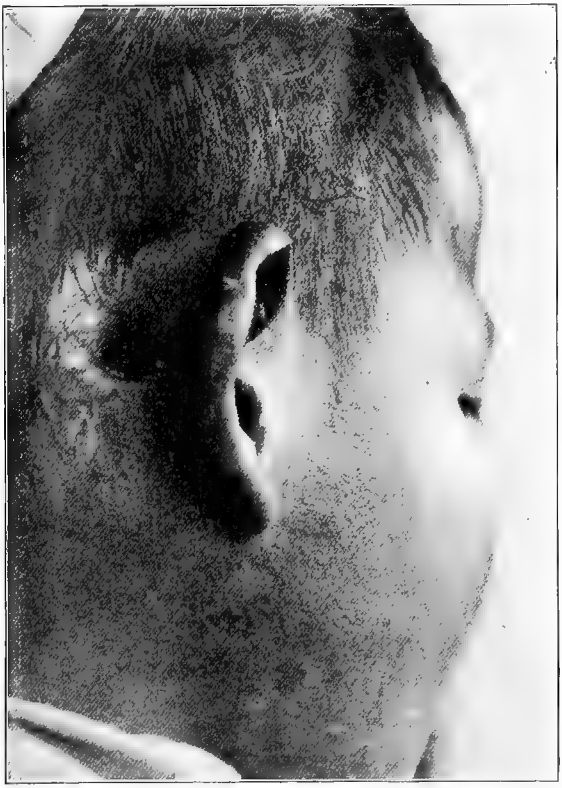

FIG. 311.—Spontaneous evacuation of mastoid abscess five years previously. (*By Jefferys.*)

healed with a smooth funnel-shaped opening into the middle ear. Suppose this were not syphilitic, it is such a condition as one would expect to see as a late stage of the polypoid trouble.

Suppurative Mastoiditis and the Radical Operation. -As may be readily inferred, the conditions of acute and chronic suppurative mastoiditis are frequently met with, probably in proportional excess to western practice. Among the latter, will be found remarkably advanced cases such as that shown in figure 311. Even the cases of acute infection have often reached mature development before seen. One such in our clinic, had an edematous skin infection extending widely over the left side of the scalp and neck and necrotic bone over a surface about one inch wide and two and a half inches long, in a semicircle, from the tip of the mastoid process behind, and above the bony canal of the ear. Acute cases are also seen to develop, especially in connection with the bad drainage afforded by canals blocked with polypoid growths.

Our own preference is for a bold and prompt attack, necessitating a long, semicircular incision, the bearing of several inches of bone, often the laying forward of the auricle, and then the thorough exposure of the mastoid cells and the middle ear, the removal of old granulation tissue, the cleansing of the well-exposed surfaces with peroxide of hydrogen, and the favouring of the skin flaps in their collapse into the shelving cavity of the mastoid and post-auricular space.

For the bone work, the chisel and mallet are clumsy and dangerous instruments, compared with the easily controlled hand-driven burr, or, better yet, the burrs driven by the dentist's foot or electric drills. The whole work about the mastoid looses much of its difficulty and danger when these instruments are used.

CHAPTER XXIII.

HYGIENE AMONG THE CHINESE.

The authority on this subject is Arthur Stanley, Health officer of Shanghai. We make no apology for our large indebtedness to his writings as found in the *Shanghai Health Reports* and in the *China Medical Journal.* In the latter's issue of April, 1903, he calls attention to the prolonged national life as indicative of sound sanitation. Chinese sanitary laws are not embodied in any code, though the Taoist religion has as its base a large number of health maxims. Stanley says that the Chinese know that "in order to live long they must live moderately." They have "two main laws of health which are very comprehensive; namely, 1. restraint of all the appetities, 2. cleanliness in house and person." We dissent from the idea that the house of an average Chinese is cleanly.

"The Chinese never intermarry with one of their own name, and this may account for the absence of many diseases supposed to be dependent upon or derivable from consanguinity. This is not true of the beggar class."—*Dudgeon, Peking.*

With regard to **food,** it is true that superficial observation might incline one to draw the conclusion that their culinary practices are crude and insanitary, at times filthy. But close observation will reveal the fact that there is little or nothing that the Chinese eat that is not subjected to the temperature of boiling water or boiling oil. An exception is in the case of fruit, in which they grossy sin at times, eating overripe and sometimes positively spoiled fruit; but they are not great fruit-eaters and they pay the penalty for their error in sweeping epidemics of cholera and dysentery. A conclusive argument that Chinese food is sufficiently nourishing and fairly well suited to human digestive ability is the comparative absence of rickets and gout in the race. Carcinoma of the stomach is also less common proportionally than other forms of the disease.

"We find that the great prevalence of dyspeptic troubles may be said to be due to * * * improper and badly cooked food, vitiated water, and malarial climate."—*Coltman, Tsinan.* We should substitute for these excessive starch diet and opium smoking.

In their houses there is usually an abundance of **ventilation,** during the daytime, when the doors and windows are thrown wide open, and, in the case of shops, most of the front of the house taken down as well. "Moreover, the Chinese dwelling has plenty of natural ventilation. But at night the house is closed up and there is little inclination to observe the rule of six hundred cubic feet of air space per individual occupant, fifty to a hundred feet being a nearer approximation to life in the humbler dwellings.'" But even so, in Philadelphia we have taken a child with double pneumonia out of an attic cubby, approached by a ladder and diminutive trap door, and having but one window and that nailed shut for the winter. There were eight occupants of the room, including the child. The stench was frightful, decayed vegetables and human excreta being well represented therein. Improvement in the child began from the moment the street was reached. We have never seen anything approaching that condition in China.

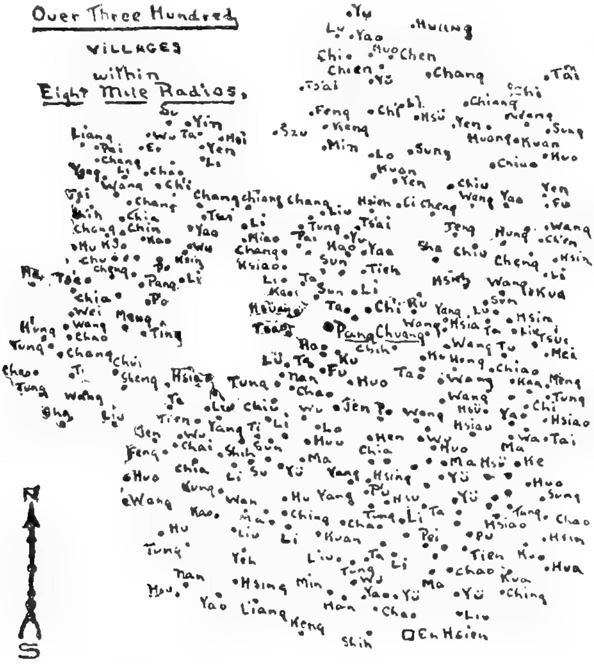

FIG. 312.

"With the Chinese there is the perfect appropriation of the sunlight in preference to artificial illumination. They rest, work, and sleep in periods that precisely accord with the periodicity of nature."—*Dudgeon, Peking.*

In the **disposal of refuse**, Stanley thinks that modern hygiene has least to teach and most to learn from China. "The principle of returning ordure and garbage to the soil is the only true and economical one, where the earth is replenished, and the refuse purified by the most complete of bacteriological processes. The Chinaman wastes nothing"; whereas we resort to the most expensive and inefficient means of destroying garbage, the Chinese use its possibilities to the utmost, with the least expenditure. Stanley believes that the typhoid bacillus and the cholera bacillus are ingested by means of infected vegetables when the ordure is applied directly to them, and that in China the two diseases are more frequently derived from this source than from impure water. This is also very possibly the method of Ascaris infection, for we, as well as others, have observed the ova of these parasites, and also of tricocephalus, in abundance in the washings from garden earth and garden vegetables in China.

Stanley suggests that "in the construction of house drains and street sewers in the cities modern hygiene can be of real use," and humorously notes that in the cities, garbage is allowed to accumulate, and when divorced from the ground the principle of returning all refuse to Mother Earth does not flourish happily.

In the **prevention of infectious disease** there is much for modern hygiene to do. Already vaccination has largely superseded the native type of smallpox inoculation. The *New York Medical Journal*[1] says editorially on the Annual Report of the Bureau of Health of the Philippine Islands.

> "Heim and his staff have had the courage to break away from the routine cleaning up of back yards, alleyways, and individual premises, and to expend their energies and their money on larger and more general problems, to the end that, a sound foundation being laid, the superstructure of details may naturally follow. Each peso that has become available for sanitation and public health work has been spent in vaccination, in combating intestinal parasites, in boring artesian wells, and in other similar projects. By thus attempting to eradicate smallpox, to lessen the depressing influences of intestinal parasites, and to provide a better water supply, the resisting power of the community has been raised and both morbidity and mortality have been lowered.
>
> "This policy has naturally produced caustic criticism from those who believe that the end and aim of the sanitarian's existence should be the sweeping of sidewalks, the penning up of pigs, and the cleaning of back yards. It may be readily seen that in a country like the Philippine Islands the former policies will be productive of more good than the latter. In a graphic table on page 98 of the report the death rate in the Swahig Penal Settlement is shown to have been reduced from 261 in 1,000 in 1905 to 10.78 in 1,000 in six months of 1908, by the sanitary measures introduced by the Bureau of Health of the Philippine Islands. There are many interesting details in the report, which will amply repay the perusal of one interested in the sanitation of a tropical country hitherto allowed to pursue its unhampered unsanitary way."

There is much that applies to China in these ideas. The Chinese never isolate infectious disease, though occasionally they evacuate a plague-stricken district, and frequently burn infected clothing. Isolation and disinfection are matters for future training.

The Chinese place **the dead** in a water-tight wooden coffin, thick-walled, mortised, and varnished, which is half filled with lime, the body laid thereon, and over all more lime added. These are rarely buried at once, but the absence of odor is an indication of the excellence of the method. Cremation is not practised.

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[1] *New York Med. Jour.*, June 26, 1909.

The **clothing** is of cotton or silk, thin and scanty in summer, when no hat is worn by the men; thickly wadded and many-layered in winter, and infrequently changed in its deeper strata. Except for the shoes and the bandages of the women with small feet, the clothing of the Chinese is extremely hygienic, being loose and airy and comfortable, probably the most comfortable worn by any human race.

Alcoholism is rare in excess, but is on the increase in the ports. In many years we have seen only one riotously drunken Chinese, and that in Shanghai.

> "Who has not seen the vinous type of nose in China, that tell-tale nose that goes along with a ruined stomach? At the same time I admit readily enough that there are not a few total abstainers amongst the Chinese. Statistics from out-patients here show about 57 per cent. This is perhaps a little too high, yet as the Chinese are mostly very candid in the matter it cannot be very far out."—*Gerald S. Walton, Hankow.*

Opium, however, takes its place. (See Chapter XI.)

We wou'd agree with Stanley that **polygamous marriage** systems are at least good in so far as unmarried females are rendered few and prostitution rare. Concubinage may be preferable to the "flaunting prostitution of Europe," but China flaunts both—abundantly.

In another paper, "*Hygiene in China*,"[1] Stanley outlines where it may be **possible to improve** Chinese hygiene by grafting certain modern methods of sanitation thereon, and suggests that, there being plenty of Chinese at the present time, it may not be clear what worthy object can be attained. But the Chinese are evolving a new and modern life, and "modern sanitation will certainly follow modern commercial methods." It will bring alcoholism, for example, in all likelihood,—the greatest single unsanitary factor in modern life. He suggests the following chief ideas.

Firstly, **universal vaccination** against smallpox.

It should be in every hospital throughout China; city and country stations should be established, far and wide; and free use of hand-bills offering vaccination without charge as already practised by the Shanghai Board of Health (Municipal Health Department).

> "A recent British volume tells the story of vaccination in India. It is by a military surgeon, Major G. P. James, and deserves the attention of all open-minded skeptics as to the value of Jenner's discovery.

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[1] *The China Medical Journal*, Nov., 1906.

"Briefly put, the story Major James tells is that of a steady decrease of smallpox closely following an increase in the application of vaccination. The following table gives the records of smallpox death-rate per million:

	1868–1887	1888–1907
Bombay	537.2	240.5
Central Provinces	1,020.1	502.7
Punjab	1,099.3	520.7
Madras	1,163.9	673.0
Berar	1,083.1	183.0
British India as a whole	1,032.3	466.0

—*Colliers.*

Secondly, **prevention of tuberculosis.**

Instruction should be given in every hospital in the mode of infection, and that spitting should not be practised except in spittoons containing water or disinfectant, into the fire, or into drains; and that they should not cough into each other's faces. There should be a ward for tuberculosis in every hospital. And especially should consumptive patients be furnished with leaflets of hygienic instruction. A translation of that issued by Stanley is as follows:

PREVENTION OF TUBERCULOSIS.

[*Translation.*]

1. Consumption causes one death in every four among the Chinese living in Shanghai.
2. Consumption is an infectious disease and is preventable.
3. Consumption is contracted by taking into the body, chiefly by the breath, the germ of the disease. This germ is contained in the spit of consumptives and in the minute droplets sprayed into the air by consumptives in coughing, speaking, or sneezing.
4. These germs are only derived from persons suffering from consumption and are found in great numbers in the spit.
5. In a moist state this spit does not infect the air, but if allowed to dry and become dust it is very dangerous, and is then a means by which the disease is spread from person to person.
6. Promiscuous spitting is a dirty habit and a consumptive should not spit anywhere except into a spittoon containing water or disinfectant, into the fire, or down a drain.
7. A consumptive should not cough into the face of another person.

In his health report for 1908 he advocates the provision of dispensaries for the treatment, and education in preventing the spread, of consumption; and particularly a model sanitarium for curable cases, and hospitals for advanced cases—suggesting Mohkanshan for the former. For Hankow undoubtedly the neighbourhood of Kuling would afford a better situation for such an institution.

Shanghai Per Cent. Deaths from Infectious Disease among the Resident Population During Seven Years.

Year	Smallpox		Cholera		Typhoid fever		Diphtheria.		Scarlet fever		Tuberculosis	
	Non-Chinese	Chinese	Non-Chinese	Chinese	Non-Chinese	Chinese	Non-Chinese	Chinese	Non-Chinese	Chinese	Non-Chinese	Chinese
1902	3	434	8	1,500	6		8	.	27	1,500	7	2,000
1903	7	241	3	162	13	....	3	. . .	1	2	26	1,976
1904	11	759	1	0	7	...	2	..	3	0	11	1,827
1905	14	246	0	0	7	.	2	....	1	0	15	1,414
1906	0	29	4	103	11	..	1	...	3	5	14	1,000
1907	21	863	18	655	7	. .	1	62	14	79	35	960
1908	5	143	1	8	8	..	1	54	2	33	29	938

Return of Chinese Deaths. Shanghai, 1908.

Month	Small-pox	Cholera	Tuber-culosis	Diph-theria	Scarlet fever	All causes
January	64	0	45	6	1	702
February	32	0	78	7	4	638
March	17	0	96	7	11	686
April	18	0	85	10	2	676
May	6	1	73	5	4	730
June	5	1	73	1	0	650
July	1	2	110	2	4	712
August	0	2	94	0	0	838
September	0	2	78	3	0	815
October	0	0	78	3	3	627
November	0	0	66	8	1	579
December	0	0	62	2	3	503
Total	143	8	938	54	33	8,156

Chinese Population	530,000
Death rate among Chinese	15.4

Infectious Diseases. Hongkong, 1904.

The total number of cases of infectious disease reported by registered medical practitioners during the year was 758, of which 510 were cases of plague. The following tables show the number of cases of each disease reported during each quarter of the year:

Infectious diseases	Nationality	First quarter	Second quarter	Third quarter	Fourth quarter	Total	
Plague	Chinese	7	367	124	9	507	510
	Other Asiatics	......	2	......	1	3	
Enteric fever	European	22	5	10	17	54	129
	Chinese	3	5	5	42	55	
	Other Asiatics	5	7	4	4	20	
Cholera	Chinese	1	35	4	......	40	41
	Other Asiatics	......	......	1	......	1	
Smallpox	European	......	3	1	1	5	64
	Chinese	15	35	3	1	54	
	Other Asiatics	2	2	1	......	5	
Diphtheria	European	1	1	1	......	3	6
	Chinese	......	......	1	2	3	
Puerperal fever	Chinese	......	1	1	3	5	6
	Other Asiatics	......	1	......	......	1	
Scarlet fever	European	......	......	......	1	1	2
	Chinese	1	......	......	......	1	
		57	464	156	81	758	

Infectious Diseases. Hongkong, 1905.

The total number of cases of infectious disease notified during the years was 508, of which 304 were of plague. The following table shows the nature and distribution of these diseases:

	City of Victoria Health Districts										Peak	Kowloon	Harbour	New territory	Villages of Hongkong	No address	Imported
	1	2	3	4	5	6	7	8	9	10							
Plague	4	25	2	18	17	11	20	27	38	18	1	75	13	23	4	2	6
Typhoid	4	12	9	5	3	1	3	2	2	5	1	10	12				21
Cholera		3														1	1
Smallpox	5	8	3	2	1				4	2	1	9	12	1	3		24
Diphtheria			3	1					1	1	1	4			1		
Scarlet fever	1																
Puerperal fever		2			2				1	2		6	2	1	1		
Relapsing fever										1			3				

"The isolation of lepers, especially of more advanced cases of lepra tuberosa, is partially and automatically effected by the popular dread of the disease. After, it may be, months of ineffectual efforts to obtain a cure, such cases are finally driven out of their homes by the harsh language of their relatives and neighbours. In the country they may retire to some secluded dwelling, or to a boat moored in some unfrequented spot, relatives regularly furnishing supplies, which are usually laid down at a distance, the leper fetching what has been given after the messenger has retired. In the vicinity of the town pronounced lepers usually pay a few dollars for the privilege of entering the lepers' guild, and so, doubtless, find some amelioration of loneliness, in association with others similarly afflicted. They then eke out a livelihood in comparative segregation by fishing, by buoying rocks, bridging creeks, and collecting dues for such services from passing vessels; and by alms. But undetected cases, especially of anæsthetic leprosy in the initial stages, continue dwelling in the midst of the community. Without more effective segregation leprosy must continue endemic; by establishing and supporting a well-regulated leper colony, the Prefecture might rid itself of this dreadful malady."—*Health of Wuchow*, 1905, *Macdonald.*

The Chinese should be thoroughly **instructed in the mode of malarial infection**. They should be taught to fear the mosquito and to eliminate stagnant water. The usual cotton bed-hangings should be replaced by proper mosquito-netting, and particularly in the case of malarial patients in hospitals this rule should be invariably followed. Study should be made of districts harbouring anopheles and special attention given to the same. The same applies in general to blood-sucking flies, ticks, and so forth.

MOSQUITO NOTICE.[1]

No Stagnant Water—No Mosquitoes.

Mosquitoes carry malaria and other diseases.

Mosquitoes cannot multiply except in stagnant water. Where stagnant water cannot be abolished the use of kerosene sprinkled on the surface so as to form a film will kill mosquito "wrigglers," as it prevents their breathing when they come to the surface.

Old tins and bottles, broken crockery, flower-pots, and unconsidered articles of this kind capable of holding rain water should be carefully collected from the garden and backyard and placed in the house refuse receptacle for removal.

Tubs, kongs, water plants, flower-pots, saucers, or other vessels of water which cannot be dispensed with should be emptied or sprinkled with kerosene once a week.

Gardeners' kongs, dug-outs, wells, and water barrels should be done away with; water for the garden, etc., being derived directly from the tap or, if that be impossible, the kongs, etc., should be oiled once a week or kept securely covered so that mosquitoes cannot get to the water to lay their eggs.

Have the water from kennels, chicken coops, etc., regularly emptied out.

Keep drains and rain-water roof channels clean and clear and in good repair. Gully traps that are not frequently flushed should be oiled weekly.

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[1] Shanghai Health Office.

Shallow rain-water pools and slushy places can generally be obliterated by a scratch drain or levelled with house ashes, ponds and ditches by filling in with house refuse covered with a little earth or ashes.

Ornamental ponds may be kept free from mosquitoes by small fish but, if mosquito 'wrigglers' be found, the water should be oiled weekly preparatory to filling in.

A weekly inspection of house and surroundings should be made. It may be remembered that a small unheeded pot of water will suffice to breed sufficient mosquitoes to irritate a whole neighbourhood.

In regard to food, Stanley sums up by saying: "The precaution-is to eat and drink nothing which has not been recently cooked, or otherwise sterilised. We must teach them the meaning of the word "Sterilise." We need to learn it ourselves also."

There should also be an endeavour made to "isolate and disinfect cases of infectious disease."

Rejections at Slaughter House. Shanghai.

	Oxen	Sheep	Pigs
Cattle plague	12	0	0
Tuberculosis	1	0	0
Liver flukes	38	7	0
Swine fever	0	0	16
Emaciation	1	4	0
Decomposition	2	0	0
Bruising	0	9	0
Improperly dressed	0	4	0
Pregnancy	0	2	0
Tumour	0	1	0
Congested liver	0	1	0
Total	54	28	16

Finally, the following **general health notice** is used by the Shanghai Board of Health:

PUBLIC HEALTH NOTICE FOR CHINESE.

[*Translation.*]

The following measures are recommended for the purpose of preventing those diseases which by means of individual careful living and by public sanitation, are preventable, such as smallpox, cholera, diarrhœa, diphtheria, scarlet fever, measles, consumption, plague, and malaria.

Public Measures.

Sanitary inspection of houses will be carried out free of charge by the Health Department on application to the Health Officer, 1 Honan Road.

Nuisances dangerous to health should be reported to the Health Officer.

Isolation of cases of dangerous infectious disease is provided at the Isolation Hospital, Range Road. The wards are free, but for private rooms a small charge is made.

Disinfection of premises after infectious disease will be carried out free of charge on application to the Health Officer.

Individual Measures.

Food should be thoroughly cooked. No cooked food should be kept overnight from June 1 to October 31.

Vegetables and fruit grown near the ground, being liable to infection with cholera and other diseases of the guts, should be separated from the rest of the food before cooking. Cooking destroys the infective material.

Water should not be drunk unless it has been boiled. Aerated waters and such cold drinks are often dangerous to health. Tea is the best drink for both hot and cold weather.

Mosquitoes and flies carry disease, hence fly-covers should be used over cooked food. As mosquito bites carry malaria the mosquito net should be used, especially up country. Paraffin oil will prevent the development of mosquitoes in stagnant water; but no stagnant water should be allowed to accumulate.

Refuse should not be allowed to accumulate, and proper, easily lifted, galvanised iron receptacles should be used. Night-soil buckets should be kept securely closed. Proper receptacles for these purposes can be obtained at the Health Office, 1 Honan Road.

Yards and drains should be kept in a good state of repair and freely flushed with water.

Spitting, except down a drain or into a fire, is a very dirty habit, and when the person who spits has consumption it is very dangerous to other persons by spreading the disease.

Vaccination should be applied to everyone. The Chinese way of vaccinating with a scab of smallpox protects the individual, but causes the disease to spread among those not vaccinated. Those wishing to be vaccinated can be vaccinated at the Municipal Health Office, 1 Honan Road, free of charge.

Stanley's idea of **leaflets on tuberculosis** and general hygiene was taken up by the *China Medical Journal*, and the suggestion was made that the method be largely used by hospitals for the instruction of the Chinese and as a labour-saving device and a safety-valve in introducing modern methods of treatment. The Central China Medical Missionary Association have put the thing in practical form and issued the following list of pamphlets, of which samples can be obtained from them at a small figure, and then these printed cheaply for routine hospital use.[1] We have spoken of the matter elsewhere.

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[1] The question arises, what proportion of hospital patients are able to read such a notice? A conservative answer would be, 50 per cent. of adults could read it readily, according to Walton's Hankow statistics for the above. Mr. Gossh's estimate is much higher.

LEAFLETS ON HYGIENE IN CHINESE.

1. Instructions in Tuberculosis.
2. Instructions in Dysentery, Diarrhœa, and Constipation.
3. Warnings in Syphilis.
4. Instructions in Smallpox.
5. Instructions in Scarlet Fever.
6. Instructions in Cholera.
7. Instructions in Contagious Skin Diseases.
8. Instructions in Bright's Disease.
9. Instructions in Marasmus in Infants.
10. Instructions in Dyspepsia.
11. How to use a Liniment.
12. How to use a Gargle.
13. How to use an Eye Lotion.
14. How to take Internal Medicine.

The idea is to have some, or all, of these tracts in the dispensary and give to the patient the one necessary for his or her instruction.

Large posters of "The Prevention of Consumption" tract have been printed to place in tea shops, on boats, in godowns, offices, etc., etc.

We cannot too strongly recommend the adoption of this excellent plan.

In his unpretentious but excellent "Notes on Hygiene,"[1] Somerville (Wuchang) makes some suggestions; first, in regard to air.

The **Chinese house** is built to shut out thieves and withstand attack —incidentally it shuts out light and air and shuts in dirt and damp. This opinion is not in accord with Stanley's views. The fact is that in many city houses, owing to the dearness of land, the "t'ien-ching" (court yard) is made as small as possible; the roofs have projecting eaves, and **sunlight** is excluded and the full circulation of what little air there is, is prevented. Often there are no upper stories, and no under-floor ventilation.

Chinese **fear cold water** as a beverage; but we have not infrequently seen the farmer stoop by the creekside and drink out of his hand from its polluted flow. Somerville states that nearly every well in Wuchang is grossly polluted and that, though the river water is good, the method of bailing the same is by no means ideal, since it is taken from the edge of the stream in the neighbourhood of multitudes of native houseboats which continually pollute it.

"The difficulty is to obtain the supply from a sufficient depth and far enough out from the bank. Unless under strict foreign supervision, the water coolie will walk knee-deep into the river and take the supply at that depth. Now, the water along the edge of the river, for a long distance below a large town, is a lethal fluid if not very carefully treated. Besides containing the off-scourings of the town, it is, at certain times of the day, highly charged with the urine and excrement of the healthy as well as that of the diseased population of the town (water intended for drinking purposes when cold, must first be filtered perfectly clear, and then boiled for half an hour; unless filters are very frequently sterilised there is the risk that they will contaminate the water; therefore, filter first and afterward boil the water). After boiling set it aside, and when cold decant it into some receptacle, such as the receiving jar of a filter which has a tap."—*Customs Health Report, Wuhu*, 1905.

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[1] *China Medical Journal*, XXIII, 16.

The native method of dealing therewith is unpleasant, and the fauna of the average Chinese intestinal tract shows that it is limited in its hygienic perfection. With regard to the wells, the wandering and irresponsible character of the leaky drains and the proximity of the larger houses where night-soil is collected in stone-lined cisterns, are a decided barrier to the purity of well-water.

The watchword, according to Somerville, **is educate,** and he suggests the following means:

1. Draw up and distribute leaflets, such as the Shanghai M. H. O. and the C. C Br. of the C. M. M. A. has done on such subjects as consumption, smallpox, cholera (especially if an epidemic is raging), infant feeding, intestinal worms, ventilation, child-birth.
2. Give lectures on hygiene in the mission schools; this can and should be done at once; then also in government schools and army camps, and extend to public lectures.
3. The Medical Missionary Association or the local branches could draw up a lecture or, better, a series of lectures on public health subjects, with illustrative lantern slides, and could lend them round to those able and willing to use them, such lectures to be in Chinese as well as English.
4. Much can be done even now to make the streets cleaner and lessen the spread of disease if the head police official can be tactfully guided. I have been told that the head of the police in Chentu, Szechuan, has made that city the only clean city in China.

And he sums up with the idealistic recommendations that, after fires all streets should be built of a certain width; that whenever possible waterworks should be advocated, and no public latrines or cesspools or urinals should be allowed within 50 feet of a well;

"Of the many wells in Swatow it is most doubtful if there is a single one that contains perfectly fresh water."—*Henry Layng, Customs Surgeon, Swatow*, 1904.

that drains should be made water-tight; that by means of public water hulks river water should be obtained from a distance and water carriers get the water from them, from the stream centre above the city, not from stream's edge by the city walls; open drains are best in the East, but they are out of the question in the narrow streets of the cities. **Drains** should be cemented and the bottom made egg-shaped, round, or V-shaped, not flat; the corners should be curved, not square, and the gradient should be sufficient to ensure a proper flow. Dirt traps should be placed at intervals for catching mud; and so on; and all should be regularly cleaned. Latrines should have cement floors, rain-tight roofs, and fly-proof windows and doors. Instead of **kongs** (earthen jars), removable buckets capable of being covered should be provided; these for the houses. Night-soil should be carried only within certain hours.

CHAPTER XXIV.

HOSPITALS AND HOSPITAL CONSTRUCTION.

It is not purposed in this chapter to discuss the extensive subject of hospital construction in general, but to outline certain principles for the construction of hospitals and dispensaries adapted to the scientific care of Chinese patients and such as may be maintained with a reasonable regard for economy, which is quite as essential a factor in government and private institutions as it is in the at present larger field of medical missionary enterprise.

There are at the present time about four hundred hospitals in China. This includes everything from the small dispensary to the hospital of considerable size, and at a cost ranging from under a thousand dollars Mexican to seventy-five or a hundred thousand for one building with out-patient department. We are indebted for much material to the last ten volumes of the *China Medical Journal*, and particularly to an able paper by E. L. Woodward, formerly of Anking, published in the same journal for September, 1907, the paper being the result of recent mature experience in building a large new hospital in an inland city. As he says, "the condi-

FIG. 313. St. James' Hospital, Anking.

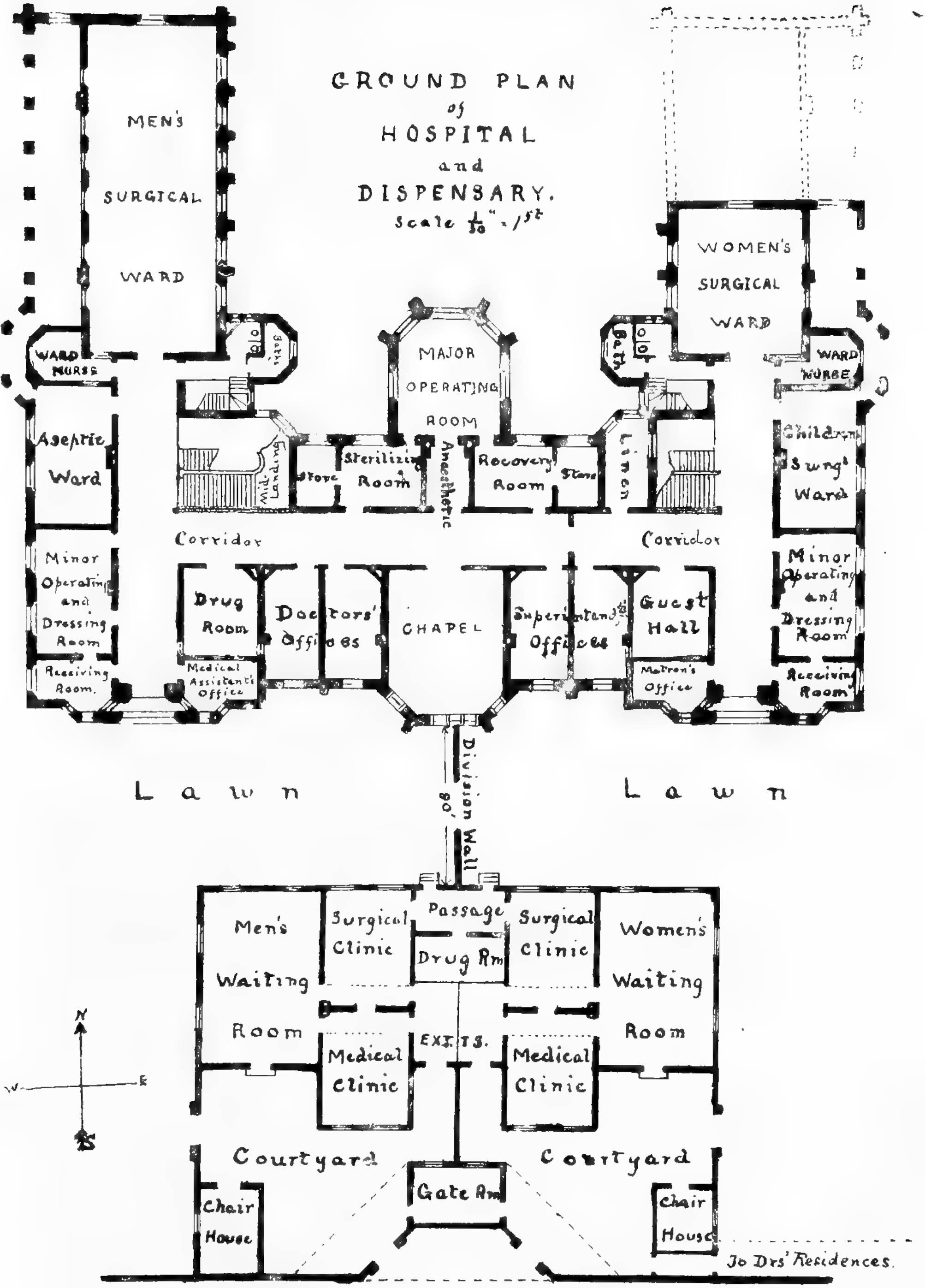
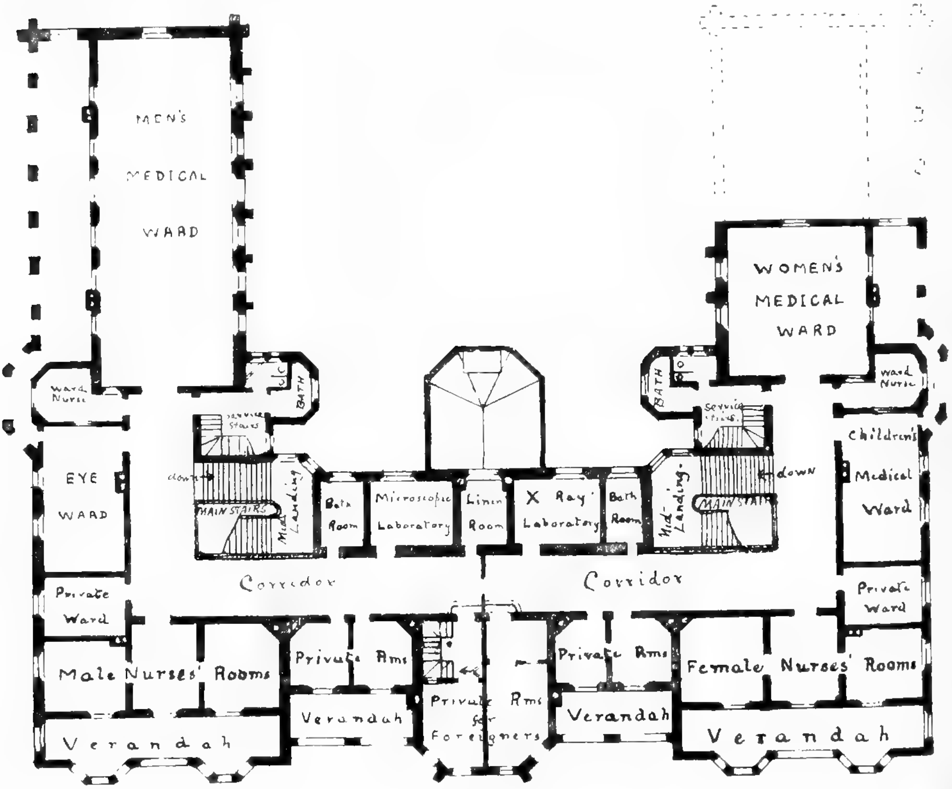


Fig. 314.—St. James' Hospital, Anking.

tions at Anking being fairly typical"—typical, that is, of the inland and thoroughly Chinese city; our own experience in the foreign settlement of Shanghai being atypical with regard to the subject in hand.

The Hospital Site. High ground, plenty of sunlight, southern exposure, abundance of fresh air, ready easy access by street or waterway, and reasonable proximity to centres of activity—these are the points to be considered in selecting a hospital site. Blessed is the man who can find the right spot to include every condition of desirability! Such is not the fate of the majority. Chinese centres of activity are not selected for the above requirements, and the willingness in China to sell is not by any means necessarily commensurate with the desire to buy. Considerable ingenuity is therefore usually demanded. The following shifting of the counters may solve the problem:



SECOND FLOOR PLAN.
Scale 1/16" = 1ft

FIG. 315.—St. James' Hospital, Anking.]

a. To have a dispensary and feeding centre in the thick of Chinese

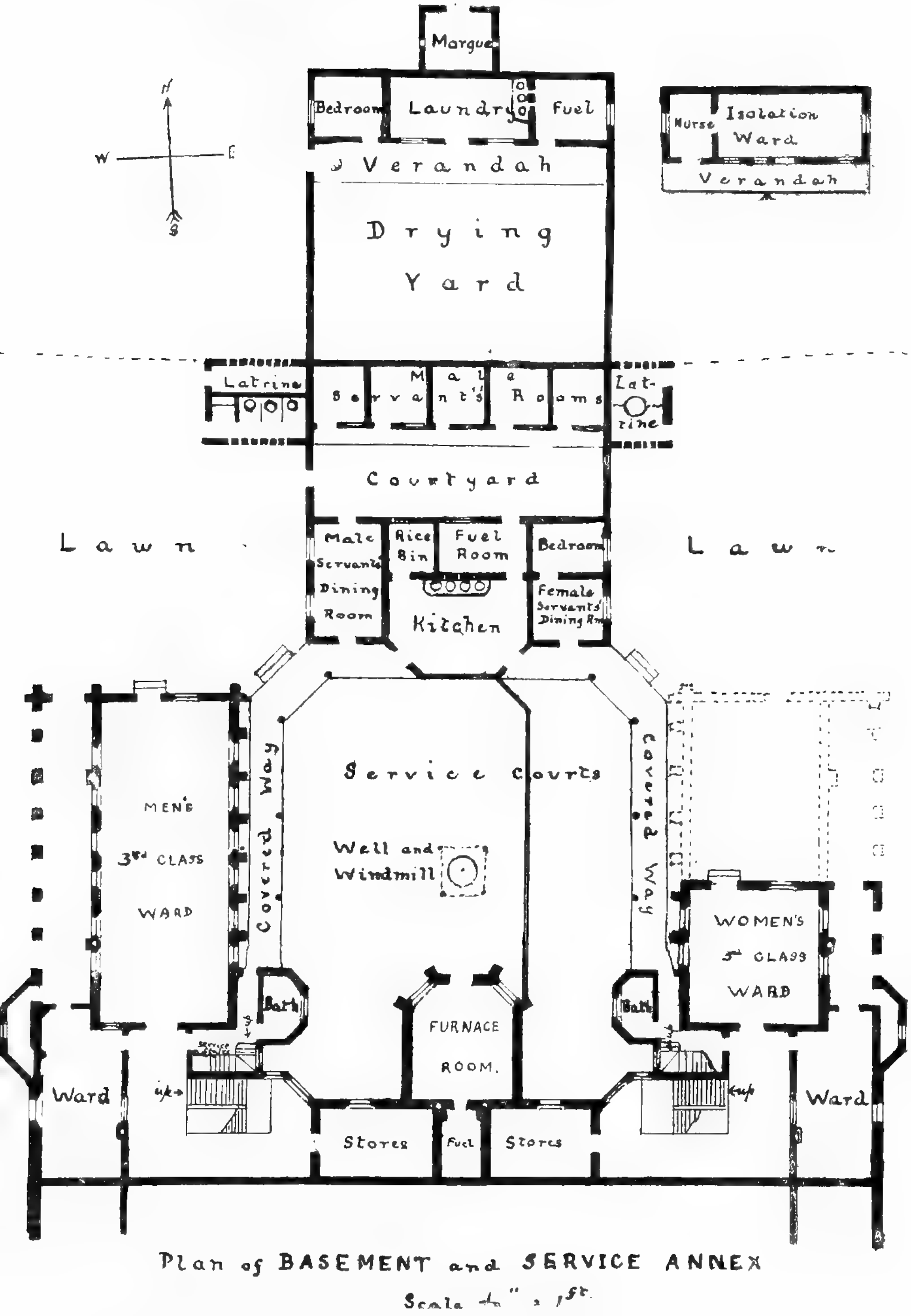


FIG. 316.—St. James' Hospital, Anking.

activity, and to place the wards and their administrative accompaniments within reasonable distance on selected ground.

b. Or, to have the dispensary and surgical wards and accompaniments in the active centre, and the medical and convalescent wards at a distance.

c. Or, perhaps less desirable, only because more involved, to have the hospital and dispensary in the thick of the fight, and a home for convalescents some otherwhere.

> "Our Convalescent Home, which is beautiful for situation, overlooking the lovely West Lake, did good service during the year, and ninety-three patients gained strength and vigour in pure air and delightful surroundings." *Main, Hangchow*, 1901.

The hospital that deliberately locates itself at a distance from centres of population or routes of travel will necessarily somewhat limit its field of usefulness, and all but deprive itself of a supply of acute and accident cases. The most fitly located hospitals of our acquaintance in China are the following: The Alden Speare Memorial Hospital of Yenping (Foochow), on the crest of a wooded hill and built for all the air possible. The Hope Hospital, Amoy, overhanging the water. The Chungking General Hospital, just within the walls of the city and again on the crest of a hill, overlooking the valley of the river. The Tungkun Mission Hospital, with a large open water-front. The St. James' Hospital, Anking, in the centre of the busy city, but with ample open space on all sides. These hospitals, besides being exceptionally well placed are the very latest thing in Chinese hospital construction.

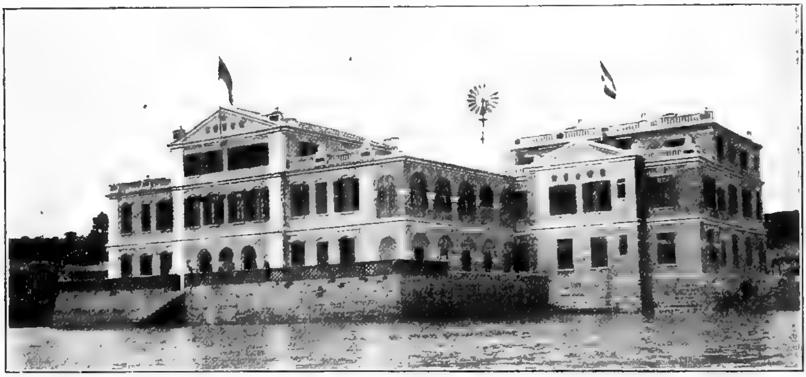


FIG. 317. Hope and Wilhelmina Hospital, Amoy.

In some cases, as in that of the Soochow General Hospital and the Yungchun Hospital, there was no choice of other than low-lying land with creeks or paddy-fields in the immediate neighbourhood, though in other respects they have been able to meet most desirable requirements.

A good hospital is always **the result of growth,** and it should never be attempted to construct a complete hospital at any given time. The dispensary should always be the beginning, wherein the physicians may make themselves known to the neighbourhood and win the confidence thereof through out-patient service and house visiting. As the pressure for wards develops, the subject of hospital construction may be considered. We cannot too strongly urge the desirability of ample and early provision of land for present and all future needs, since having begun to build, and the imperative desire for extension become known, the price of land and difficulty of purchase are many times increased.

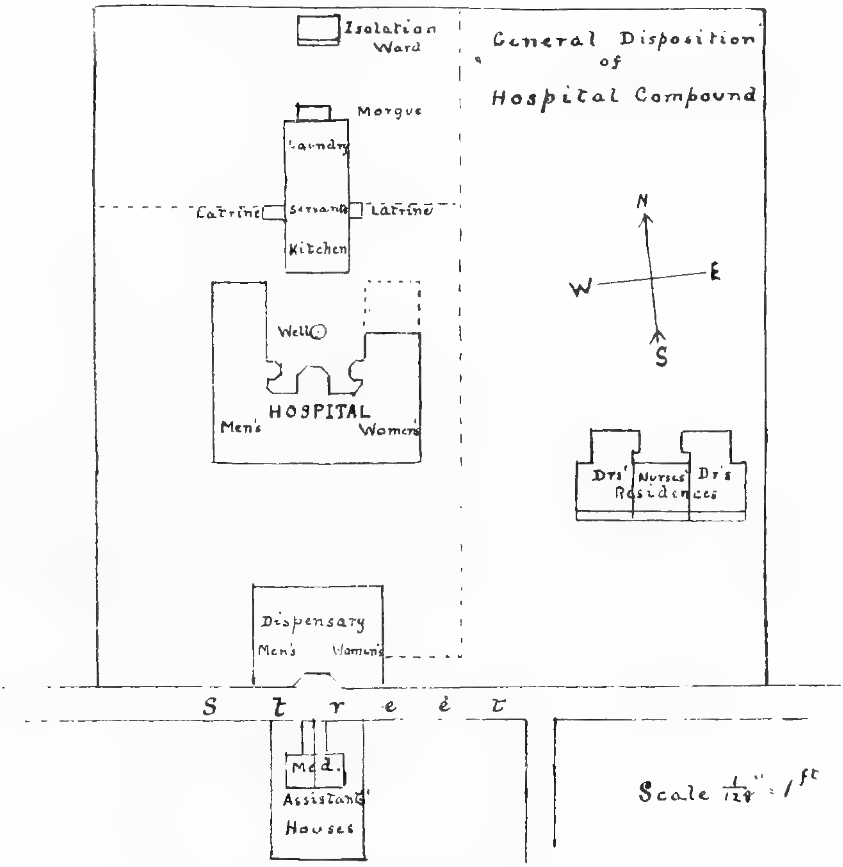


FIG. 318.—St. James' Hospital Ankin

It is good practice to construct the dispensary so that it opens directly upon a main thoroughfare, the hospital proper being placed at some distance in the rear thereof and, with a different frontage, and at a still greater distance but within easy access, the residences of the foreign and native staff. This is an admirable general plan of construction, though if telephone service is available it is as well for the residence of the foreign physician to be placed outside the hospital compound. Not so, however, in the case of the nurses. At any rate, under no circumstances whatever should patients be allowed to come to the physician's house.

There is absolute unanimity of opinion on the desirability of treating all out-patients in a separate building, disconnected from the main hospital with its wards, operating-room, chapel, and so forth. The advantages of this are manifold. Cleanliness, quiet, freedom from vermin, safety, protection against theft, and other disagreeables are thus assured. The **model dispensary** should include the following:

FIG. 319.—Blythe Memorial Hospital, Gatehouse, Wenchow.

a. In native cities, a gate room, protecting a single or double courtyard containing a chair house and a public latrine. This for dispensary patients.

b. A one-story building to include either a women's waiting-room and a men's waiting room (as in St. James' Hospital, Anking), or a larger single waiting-room divided by a railing; in inland cities the women to be on one side, the men on the other. In Shanghai the same division is planned to keep the medical from the surgical patients, there being no necessity of separating the sexes in the waiting-room. There should be a medical clinic and a surgical clinic for each sex, and it is desirable in addition to have a simple operating-room; a genito-urinary treatment room for men; and a gynæcologic examination-room for women (al' small).

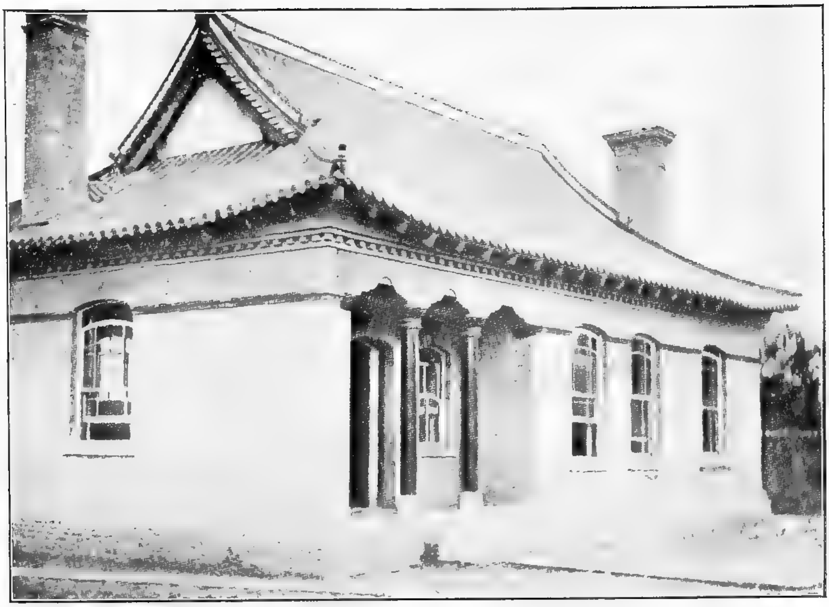


FIG. 320.—Women's Dispensary, Wei-hsien.

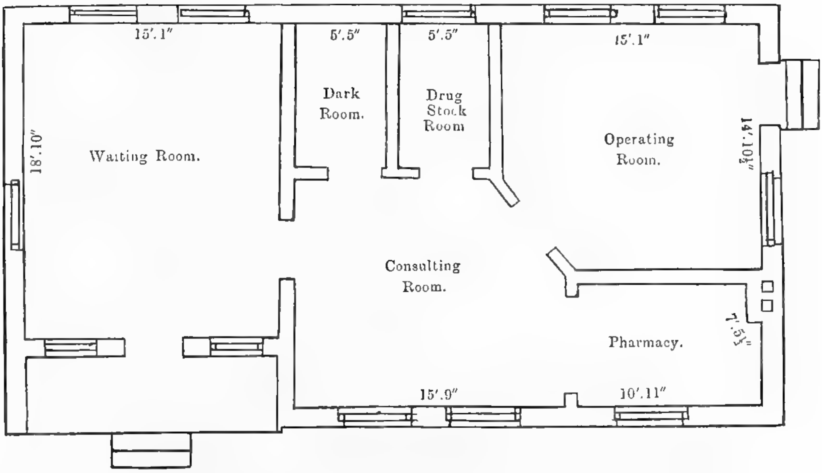


FIG. 321.—Women's Dispensary at Wei-hsien, Shantung. Ground plan.

c. The drug-room should be in a central position near the point of exit from the clinics, and there should be a small waiting space where patients may sit while their prescriptions are being filled. (See plans of the dispensaries.)

In the waiting-rooms there should be placed ample comfortable plain varnished benches, and a couple of couches for the patients unable to sit up, where the stretchers on which they are brought may be laid while waiting for examination. The main door should be wide enough to admit these.

FIG. 322. St. Andrew's Dispensary, Wusih

The medical clinic room should contain special appliances and chair for opium suicides, and provision should be made for their immediate admittance on a moment's notice. The medical clinics may be small as the patients are usually seen one or two at a time, and the number of medical and eye patients may be depended upon as being in a proportion of not greater than one to two or three surgical.

The surgical clinics must be amply large and the ventilation should be extensive. The ideal arrangement is an approach to a hollow square, a corner near the entrance or an ante-room being devoted to registration and consultation; the full side of one wall being devoted to the treatment of leg ulcers and conditions of the foot, with high stools, for the patients to place their feet upon, at a distance of three feet or so from each other; a well-lighted side of the room to contain from one to four or five patients' dressing tables (Boone table)[1] with the foot end toward the light. There should be a dispensary storeroom for cotton, oakum, splints, and so forth. All walls should be of hard plaster with rounded corners, without cornices or mopboards, and the floors and a foot or two of the walls should be of Portland cement, carefully laid, rounded at the corners and free from cracks or joints. A central drain is an addition if the sloping of the floor can be properly laid to suit it. There should be at least one available, satisfactory overhead light, and a stove or open fireplace for winter use and the supply of hot water.

If desired, a special dark room for the treatment of eye cases may be included.

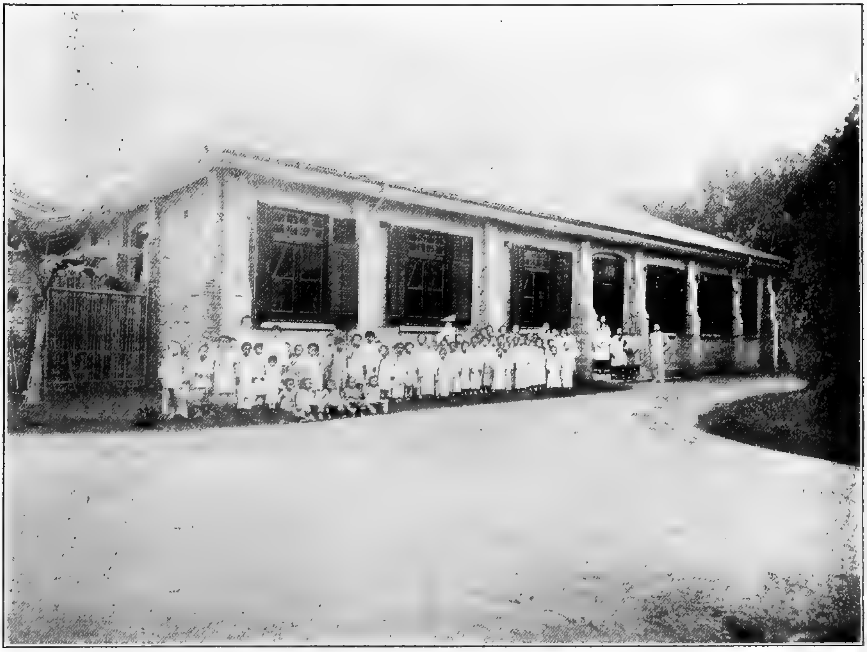


FIG. 323.—St. John's Dispensary, Shanghai.

Plans of the Hospital.—It is customary, and perhaps desirable, that the doctors in charge should plan their own institution. But the planning of hospitals by inexperienced men has proved thoroughly unsatisfactory on the whole. Hospitals planned on paper as the result of inexperienced ideas do not prove satisfactory in practical work. The sizes of rooms are misjudged, lighting is misplaced, doors are wrongly hung, and so forth, and so on. So that we advise the careful examination of the plans of already constructed institutions, the consultation and acceptance of the advice of those who have already made their mistakes, and the careful consideration of the suggestions of experienced architects. Woodward warns us as follows: 1. Adhere as closely to approved western standards as local conditions and available funds will permit. Employ the best materials and contractor available. 2. Keep in mind that a successful hospital will inevitably require enlargement. 3. Guard against the perversion of good plans by pet hobbies.

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[1] See page 350.

Style of Architecture.—There is little in the style of native buildings that is adaptable to a really good modern hospital. The Chinese recognise a hospital as a foreign institution and there is no harm in its living up to this reputation. In a general way, such as in the construction of the roof along Chinese lines, and in the decoration of the compound wall, and perhaps in the external surface of the hospital, a concession may be made to Chinese ideas; but not at the cost of solidity and durability. Japan adopts largely foreign methods of construction.

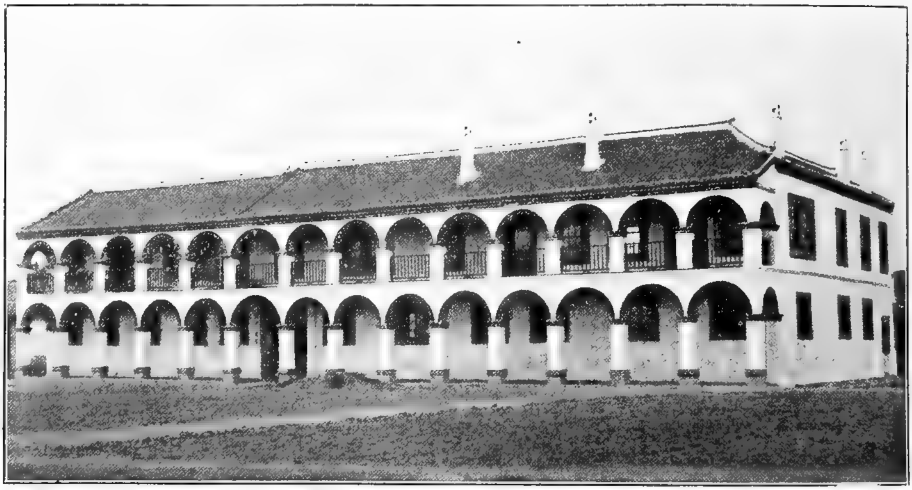

FIG. 324.—Warren Memorial Hospital, Hwanghsien. 26 x 110 feet with an L 16 x 35 feet.

The undoubtedly and thoroughly desirable pavilion plan of hospital construction, either one or two stories high, is fully suited to the matter in hand,[1] and higher buildings are to be deprecated on account of their inconvenience and on account of their tending to raise up native prejudice. Woodward advises the Gothic type as particularly suitable. We prefer the more classic style.

We have long felt that Zenana missions are not applicable to China, even in the interior provinces. They have not only proved unnecessary, but have not proved themselves particularly successful. There is no earthly objection to a western hospital for women attended by male or female physicians, but for all purposes a hospital constructed for both men and women as far as the administrative part thereof is concerned—by which we mean consulting- and operating-rooms, offices, chapel, and so forth—and a complete separation of the wards by a properly guarded barrier meets the utmost of Chinese requirements of good taste and practical efficiency. In this respect, St. James' Hospital, Anking, is a model of construction and propriety.

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[1] The Moukden General is our best planned institution of the pavilion type.

There is no better way of indicating the proper and most serviceable method of main hospital building construction than by the presentment of a variety of plans and illustrations of efficient and serviceable institutions. And with due credit to the careful thought and planning of our colleagues in China, we have selected a dozen or so of such for this purpose. The following are the main essentials which must be provided for in the complete institution:

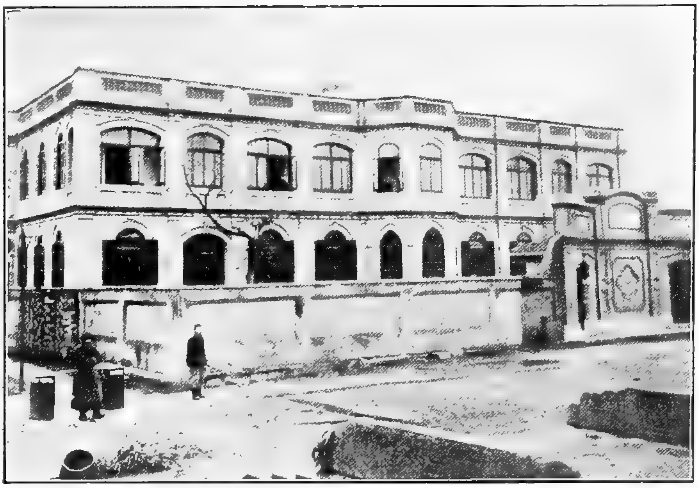


FIG. 325.—The Christian Hospital, Shaohsing. Just completed.

a. A double entrance, for men and women.

b. The ground floors should include the following:

At the entrances, 1. receiving-rooms for patients, that is, extremely simply furnished guest-rooms in Chinese style, with a couch or two for temporary waiting purposes; 2. an accident-room fitted up for the dressing of small accidents and the performance of simple surgical procedures; 3. a box or seat for the doorkeeper, who is the first absolute requisite of a well-conducted institution; 4. separate offices for each physician; 5. a resident's office and students' sitting-room. 6. Linen-rooms; 7. store-rooms; 8. steward or superintendent's offices; 9. drug-room.

10. On the one side, women's medical wards; on the other, men's medical wards.

11. There should be a proper isolation ward which may well be an outbuilding.

It is desirable to have either first- or second-class wards, or beggars' and paupers' ward and a better-class ward. The idea here is by no means to give better service to any privileged class, but to provide accommodations fitted to the intended occupants. It is cruel to place cleanly, orderly, decent patients in a mixed ward with filthy, degraded, cringing beggars and low-class coolies.

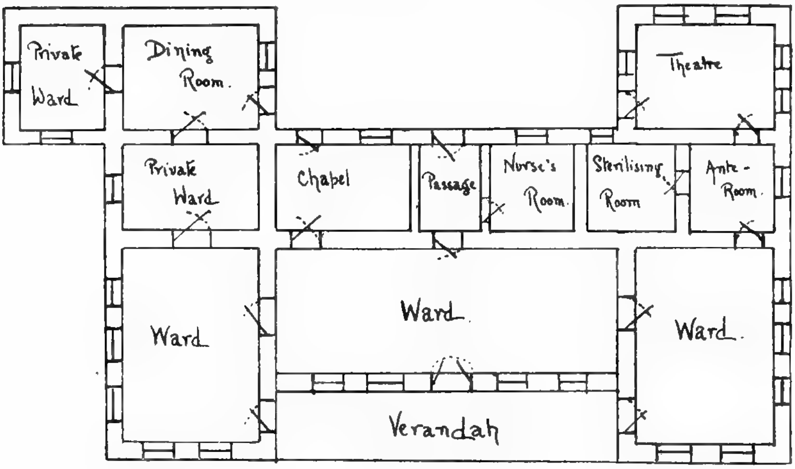


Fig. 326.—Plan of St. Agatha's Hospital, Pingyin, Shantung.

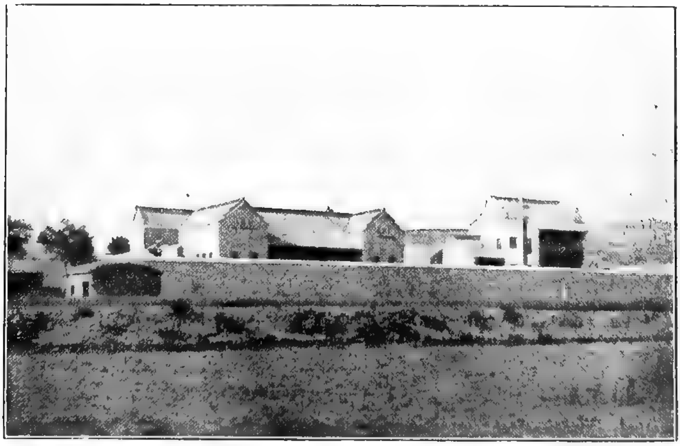


Fig. 327.—St. Agatha's Hospital and doctor's house, Pingyin, Shantung.

There should be a nurses' room opening on each patients' ward, and a proper bathroom and latrine as well.

It is fitting and best that the hospital chapel should be centrally located on the ground floor, with outside as well as inside approach.

The upper floor (or more remote pavilions) should contain surgical wards for men and for women, with their accompanying nurses' rooms, baths, and so forth. There should be a simple but efficient sterile operating-room, and at a distance from it but within administrative reach, a septic operating-room. The sterilising-room may be common to the two, as well as the anæsthetising- and recovery-rooms. This floor should also contain a special eye ward, as many private rooms as are desired, a microscopy laboratory, electricity-room, examining-room, children's wards, and so forth.

It is eminently desirable that each modern institution should contain either a large sun-parlour or at least a fresh-air provision for all tuberculous patients.

"All walls should be constructed with a damp course, consisting of three or four courses of bricks steeped in boiling coal-tar and set in cement, or of cement covered with asphalt. There should be no lath-and-plaster partition walls allowed in the constructions. The ground floors should be concreted and sealed with cement or asphalt. The offices, where men spend the best part of their lives, should be at least 15 feet above the ground floor. The sitting-rooms of dwelling-houses should also be the same height above the ground floor level, and over these should be the sleeping apartments. Direct sunlight should have free admittance, at some time of the day, into every room, through large windows; and ventilation requires particular attention. The rooms should be heated from grates—not by stoves; preferably those of the slow combustion type, such as the "Teal" grate, where the fire burns on the hearth, air for combustion being admitted through a channel beneath the hearth stove. The floors of bathrooms should be constructed with T-iron joists filled in with concrete, covered with asphalt; and the floors where the baths sit, should converge toward 2 1/2-inch pipes, passing through the walls, placed at a slightly lower level than the surrounding part of the floors and opening over gargoyles on the heads of down pipes outside the walls. There should be no closed drains anywhere on the premises—open channels are best. Courtyards should be concreted throughout. Where there are no courtyards, the ground all round the buildings, for a breadth of 10 feet from the wall out, should be concreted, the outer edge of which should form a shallow channel leading to one of the main channels. Water should be led on to all the houses from a tank raised to a sufficient height, and supplied with water cleaned by percolation through a filter-bed suitably arranged; or from wells. At many places along the Yangtze sand-beds are found at various depths; wells sunk though these afford a clean supply of water requiring no further filtration for household use. These wells should be lined with bricks puddled with blue clay outside where surface water is likely to leak in.

"The above are some of the points which need attention when erecting places of business or dwelling houses on, or in the neighbourhood of the new settlement, or in fact anywhere else, in low-lying places, other than along the Yangtze, to ensure an

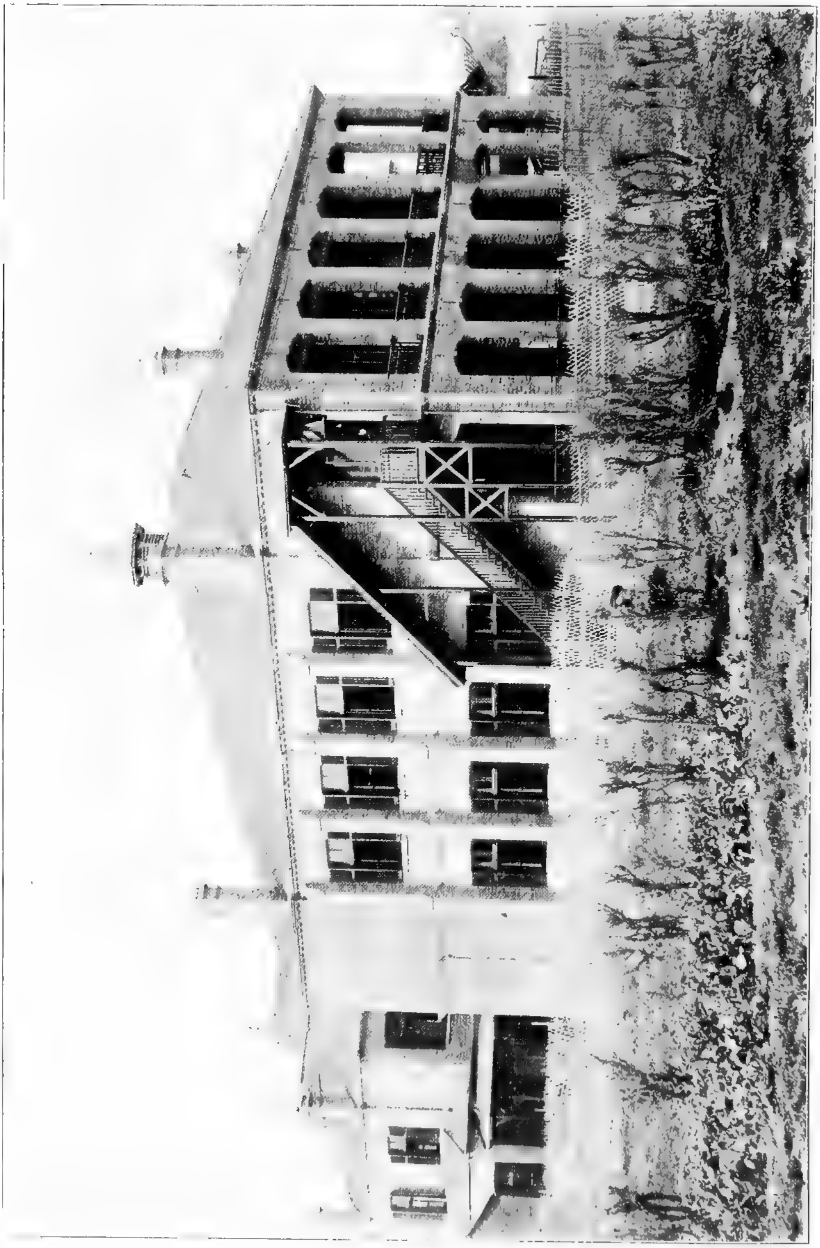


FIG. 329. St. Elizabeth's Hospital for Women, Shanghai. Wards, etc., in the foreground, dispensary in the rear. They are connected by a covered way. The entrance is from the street behind the dispensary.

efficient state of sanitation, and thereby reduce the sick rate."—*Customs Health Report, Wuhu*, 1905.

Operating-rooms. –See Chapter XIII, on Asepsis and Antisepsis.

Corridors should be straight, wide, thoroughly well ventilated, always well lighted, and free from encumbering furniture. Ten by fourteen feet in cross-section (Woodward).

An excellent suggestion by Woodward is that all doors should have their upper halves glazed with ground glass.

The staircases should be wide and with low treads; they should be provided with metal—preferably brass—stepguards; and best-quality linoleum is the most perfect floor covering for halls and stairways, if it can be provided.

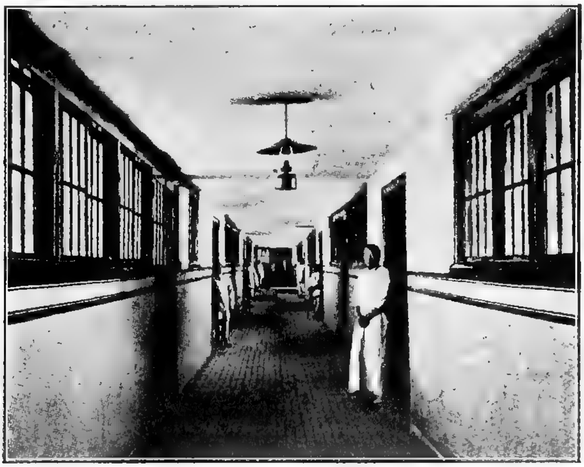


FIG. 320.—Hospital corridor, Moukden Free Hospital.

Ventilation is the most important item in hospital construction. It should be made a matter of conscience that there should be one thousand cubic feet of air space for every bed in the hospital, this air space to be in the room containing the bed, not to include bathrooms, hall ways, and so on. There should be one window to every two beds. The ideal is the pavilion plan, in which windows are on the two long sides and one short side of every ward. Every private room must have at least one large window with door opposite and transom.

The particular method of ventilating is a matter of individual selection and architect's advice. The simplest and the cheapest is to introduce a square of perforated zinc in every window and door in the hospital to replace a large pane of glass in the same. These may most conveniently be placed in the transoms, and in small rooms two such ventilators are better than one. Tobyn's tubes or flues, 10 inches square and 6 feet long, should be in the walls of the wards opening externally at the floor line and within the wards above the patients' heads. Otherwise they will be used for latrines, spittoons, and waste-paper baskets.

Verandas are eminently desirable, and in winter as sun parlours (glassed in), in summer as open-air places of refreshment, their value cannot be over-estimated. They are desirable from every standpoint except that of shutting off the sunlight from the wards and rooms. Where two-sided light is provided one-sided veranda space is advisable; where one-sided light only is provided, it is questionable whether the veranda does not do more harm than good. We feel so strongly about the virtues of sunlight in hospital practice that we consider it one of the therapeutic agents of chief value. In St. Luke's Hospital, Shanghai, we had charge of two large wards over several years. One was at least twice as bright and sunny as the other and about 2 feet wider; and it was readily noticeable that the patients did better in that ward, were more cheerful, happier, and less prone to prolonged convalescence and infection than in the narrower, darker room. We called it the "Cheerful Ward," and it lived up to its name.

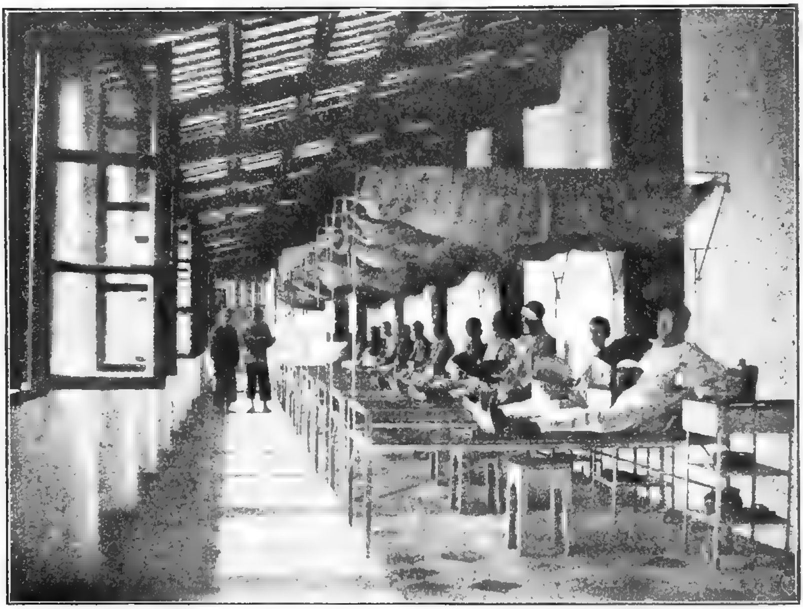


FIG. 330.—Liegerhalle, Tungkun Hospital.

No private room should be less than 11 feet square, and 12 x 10 is a very good average size for one patient. But as most patients require an attendant, 12 x 14 is better. Wards should be built not less than 24 feet wide, and certainly not less than 12 feet high—13 or 14 being better.

Latrines are a serious problem. In a land where running water is unknown and difficult to provide and where there is no sewerage and therefore water-closets are impossible (in Shanghai even forbidden by law), the difficulty of maintaining odourless and hygienic latrines, internal or external, is great indeed. The problem is attempted by many (for example, the Methodist Hospital in Nanking) by placing the latrines outside the main building; bedside commodes being used where necessary. (The commode provided by the British navy is the most perfect thing of the kind we know of (H. M. S. Sick Quarters, Weihaiwei, kindness of Fleet Surgeon F. D. Lumley), but the wooden Chinese commode with cover is not bad.)

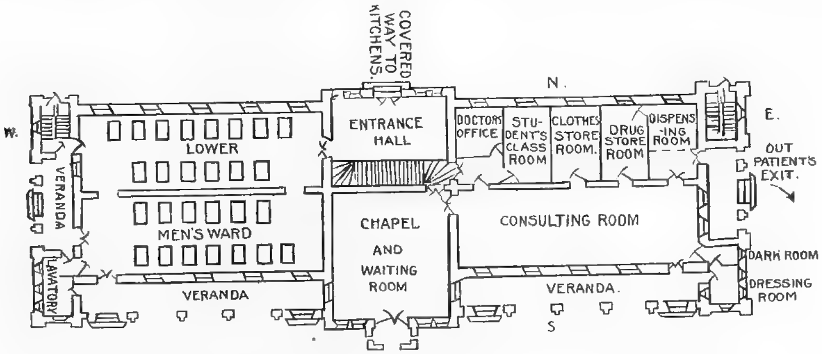


FIG. 331.—Free Methodist Mission Hospital, Wenchow. Ground floor.

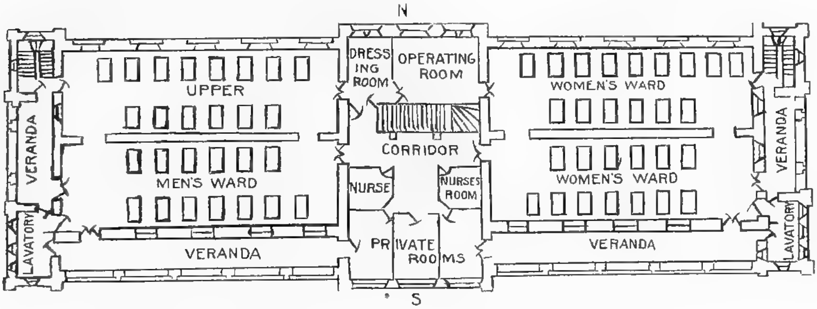


FIG. 332.—Free Methodist Mission Hospital, Wenchow. First floor.

And certainly for servants and patients on the ground floor such is the best plan to be followed. Beebe has constructed his outside latrines as small brick out-buildings with cement walls and floor, thorough ventilation, wall-face urinals with slanting drainage, and the usual Chinese divided stone footings for patients at stool. They are thoroughly hygienic, and if carefully overseen and under the charge of an efficient servant, quite satisfactory. They should be frequently flushed with Jeyes' fluid and water.

The plan of internal latrines in use in St. James' Hospital, Anking, and in St. Luke's Hospital, Shanghai, was devised by joint consultation of those in charge of these institutions. It is as follows:

Porcelain wall **urinals** are provided in each closet with running water attachment, and the particular point to be observed is that a slanting cement drain should be placed on the floor under each urinal to catch overflow. Tar-camphor (naphthaline) balls are a cheap substitute for gum-camphor as a deodorant in these urinals. They should be flushed occasionally and the floor about them disinfected from time to time. An important point is that there should be such thorough ventilation of the closet that drying may constantly be accelerated. The **commodes** are constructed as follows:

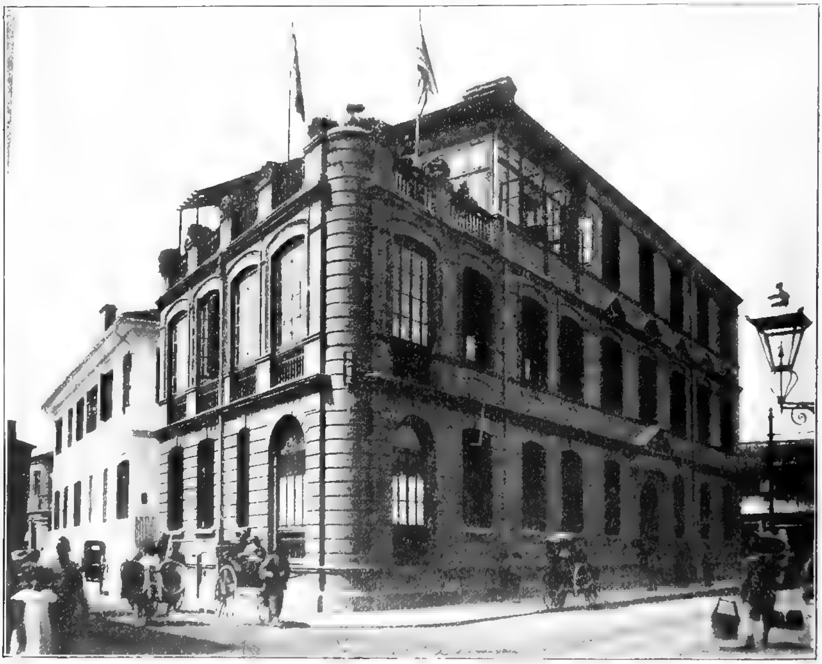


Fig. [illegible] St. Luke's Hospital, Shanghai. Main building.

A large, flat, Ningo-varnished seat with an opening far too large to be comfortably sat upon is constructed of hard wood, Ningpo-varnished; round corners; the opening being directly over a still larger mouthed zinc or copper pail which rests upon the tile floor and slips under the seat, being exactly tall enough to pass under and leave no open space. There is no front board to the seat. The patients squat upon the seat in regular Chinese fashion. A lid is so constructed that it will lift to almost an angle of ninety degrees, but not quite, being prevented by a wooden block or

FIG. 334. St. Luke's Hospital, Shanghai. New wards.

pin. When in use the lid rests lightly on the back of the occupant, and no other provision is made or allowed for retaining it. When the patient is finished, the cover falls of its own weight and closes the commode. The arrangement is hygienic and practically satisfactory, and if a supply of

Jeyes' fluid is kept in the pail and the whole kept clean and in order, and especially if a thorough draught of fresh air is provided for drying and deodorising, there is no better latrine to be made than after this model. But if the ventilation is not thorough and the care slovenly, it, too, will fail of perfection. The pail should be emptied two or three times daily, cleaned, disinfected, and sunned from time to time.

Cost.—A hospital may be constructed for almost any sum: from two to ten thousand dollars (Mexican) will construct a dispensary as large as one man ought to undertake to manage. From ten to twenty or thirty thousand (Mexican) will construct a simple hospital for two chief physicians. From forty to fifty or more thousand dollars will construct an efficient, decent, and attractive institution for three or more chiefs, to see twenty-five to fifty thousand patients a year.

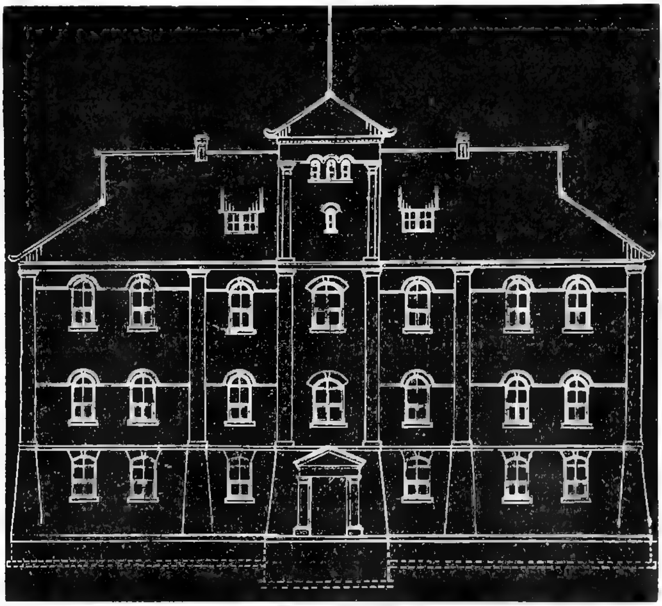


FIG. 335.—Front elevation of the Union Medical College, Tsinanfu.

Building materials are cheap. Furniture, if one draws largely from Japan or makes in China, is also reasonable in price. Supplies are expensive, including freight and duty and, at times, inland transportation.

We cannot close this simple discussion without a plea for better and more hygienic hospital construction; for the abandonment of the antiquated notion that anything is good enough for the Chinese coolie, because it is better than what he could provide for himself. And we would even go so far as to insist that something of beauty, something of daintiness,

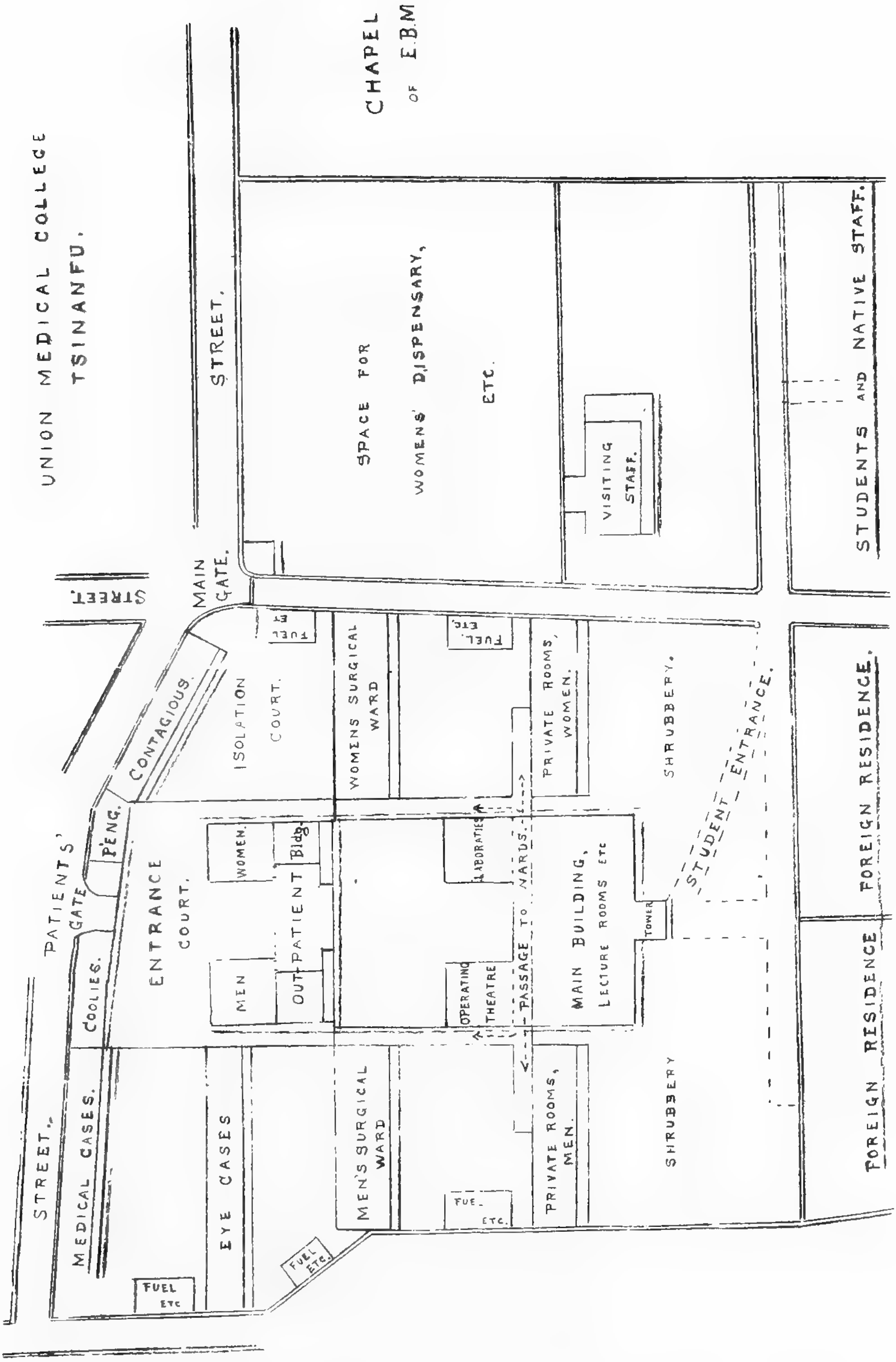


Fig. 336.—Plan of the Union Medical College, Tsinanfu.

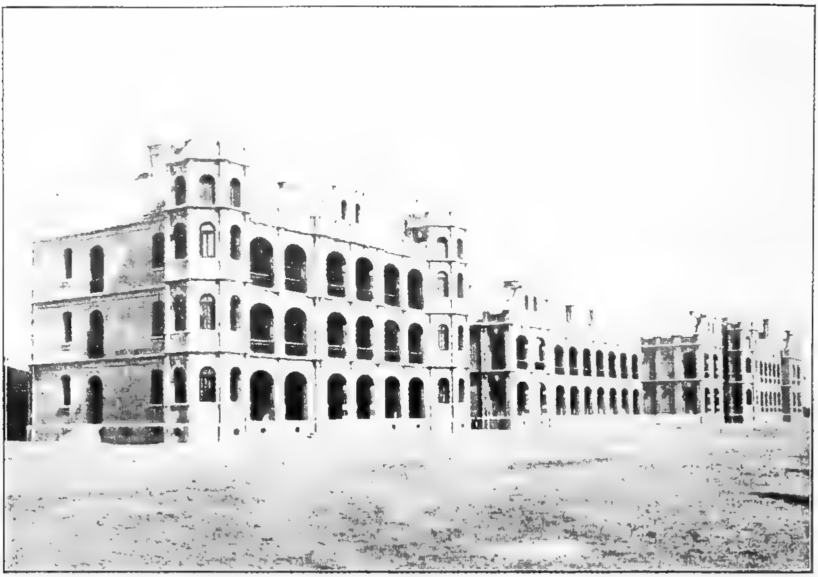


FIG. 337.—Municipal Hospital, Shanghai.

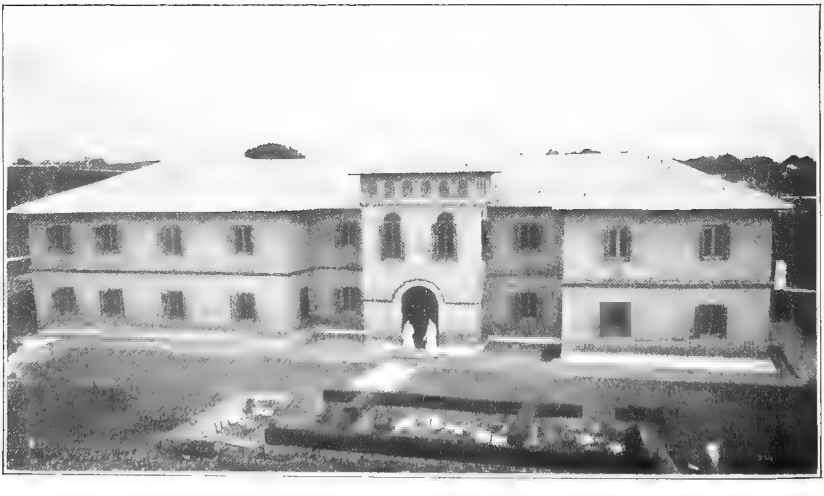


FIG. 338.—Margaret Eliza Nast Memorial Hospital.

something of charm, something approaching the ideal, is by no means out of place in hospital construction in this land, where our function is to give and to teach the best that we have.

MARGARET ELIZA NAST MEMORIAL HOSPITAL, SING-IU, CHINA.

It is situated on a little hill outside the West-gate near the Methodist Compound. The plot covers about 1 1/2 acres of land. There are a great many fruit and banana trees and a vegetable garden. The hospital is a two-story building, 130 feet long and 50 feet wide, and has a capacity of seventy beds. On the main floor are two suites of rooms for doctors' offices, a room for electrical treatment, eye and dark rooms, two dressing-rooms, pharmacy, supply-rooms, chapel, three wards, and a nurses' bedroom. On the second floor are the operating-room, nine wards, bathroom and a bedroom for nurses. Wide halls run through the building on both floors. Three stairways lead to the second floor. Back of the hospital, connected by a short covered passage, is the large dining-room, kitchens and rooms for nurses and women servants. A little lower is the laundry and a covered place for drying clothes. A three-room cottage serves as a gate-house and men's dispensary.

The hospital was built during 1904–1905.

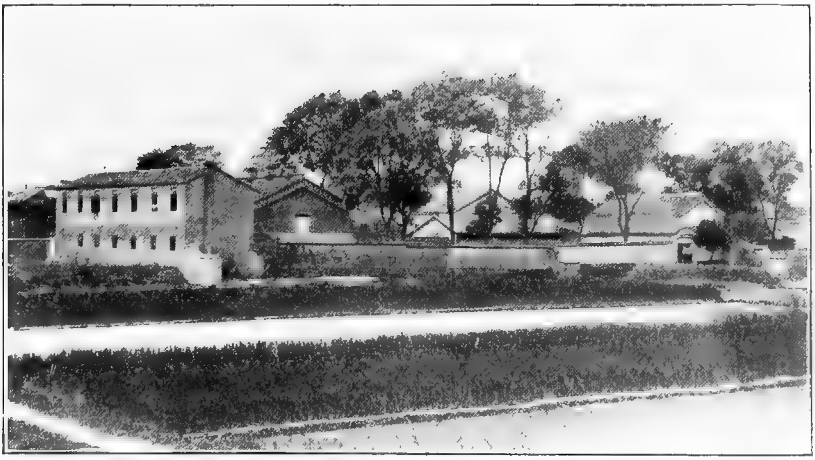


FIG. 339. Rear view of Soochow Hospital. Shows surrounding paddy fields.

SOOCHOW HOSPITAL.

The plan herewith does not include the hospital for women, which is next door, but under different management. As will be seen from the plan the wards are quite separate one from another, all connected by covered passageways. All buildings are about 4 feet from the ground, allowing free circulation of air underneath.

The total number of patients to pass through our hands last year is 13,567.

While we do a great deal of charity work, everyone who is able to do so is expected to pay something. The dispensary patients are divided into first and second classes. The entrance fees are fifty-six and twenty-eight cash, respectively. The first-class patients are seen by the foreign physician, the second class by a native graduate with the foreign physician as consultant. All first-class patients pay something for their medicines. Both classes pay for containers. In-patients range from free to ten dollars entrance fee; food extra. Opium patients are classified as first-, second-, and third-class patients who pay two, five, and ten dollars, respectively, for the time necessary to rid them entirely of the desire to smoke. The hospital is self-supporting.

There is a large out-practice connected with the hospital which adds greatly to the revenue of the hospital, though it consumes a great deal of time.

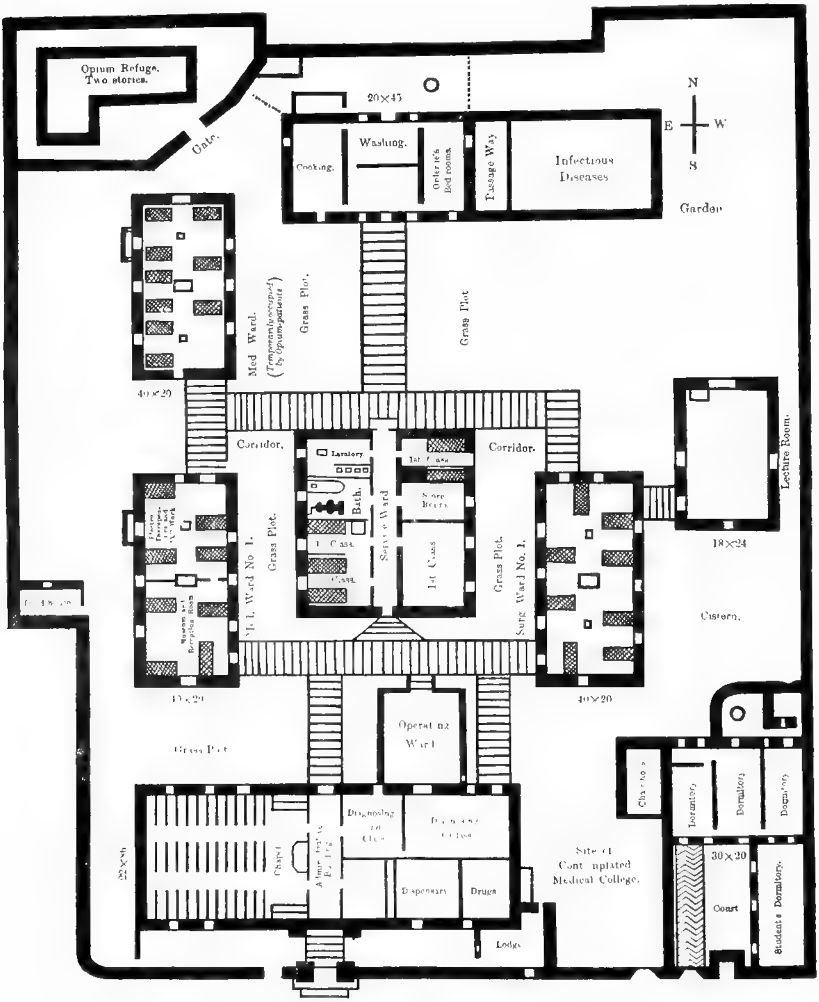


FIG. 340.—Plan of Soochow Hospital, M. E., south.

THE ALDEN SPEARE MEMORIAL HOSPITAL, YEN-PING.

The plans for the Alden Speare Memorial Hospital are largely self-explanatory. The main building is of grey brick, two stories high, and with an open three-storied 8-foot veranda on three sides, giving a total length of 165 feet, with the total width of the wings 36 feet, and of the central building 73 feet, including the rotunda.

As much of the north wing as is needed is to be shut off by a movable partition for the women's department. The administration rooms are located on the first floor in the central building. The rest of this floor and all the second floor (which is similar to the first) are given up to wards and private rooms. If more small rooms seem desirable later the larger wards are so planned that they may easily be divided at any time.

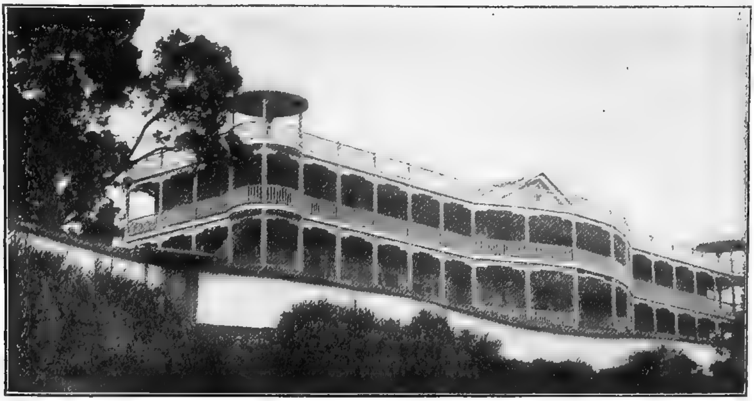


FIG. 341.—Alden Speare Memorial Hospital, Yenping.

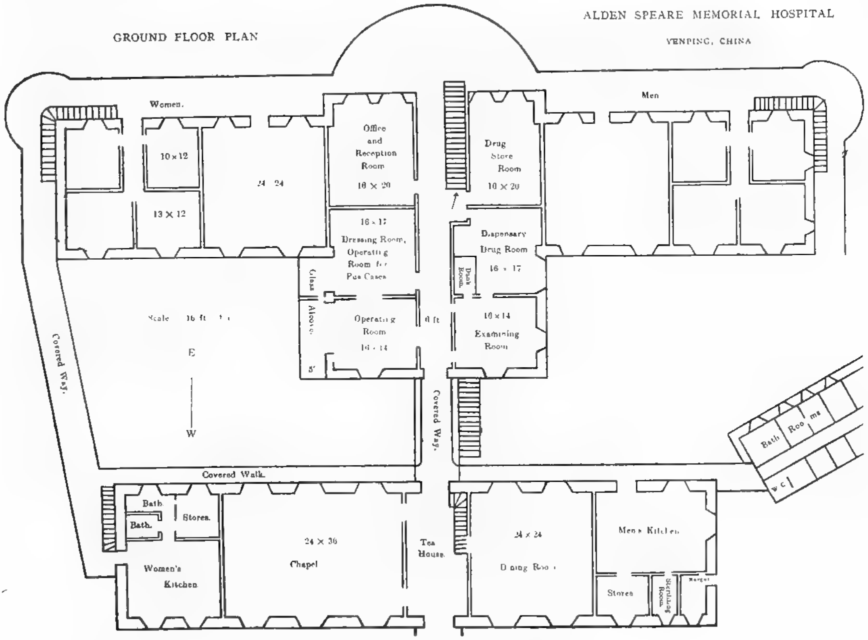


FIG. 342.—Ground plan.

Parallel with the main hospital and connected with it by a covered walk 20 feet long is a pounded earth wall building with brick corners. The second story is devoted entirely to rooms for assistants, students, and servants.

The chapel is a story and a half high, leaving a loft which may be used as a storeroom. This second building is 117 x 28 feet in its outside dimensions.

The cost of the hospital buildings, when complete, will be about ten thousand dollars Mexican. For land and wall about eleven hundred more have been paid. The intention is to carry the central part of the main hospital half a story higher, providing isolation wards and rooms for opium cases.

We plan for a system of water pipes which we hope will give us an abundant supply of running water, a convenience hitherto unknown in this part of China.

THE NEW METHODIST EPISCOPAL HOSPITAL FOR MEN, CHUNGKING.

The location is all that can be desired from every standpoint. It is near the very centre of this most densely populated city, but on the other hand, it is quite isolated and separated from the native city, being located in an extensive bend in the city wall, which extends out and away from the city. It is situated on next to the highest plot of ground (the highest being occupied by a temple) within the city, overlooking the Kia-ling river, which flows over 200 feet below. Its position insures fresh air and breezes at all times from off the river below. The building is cross-shaped, built of grey bricks and grey sandstone trimmings. The main building is four stories high, with two wings; one wing, which includes a basement, is four stories, the other is three stories.

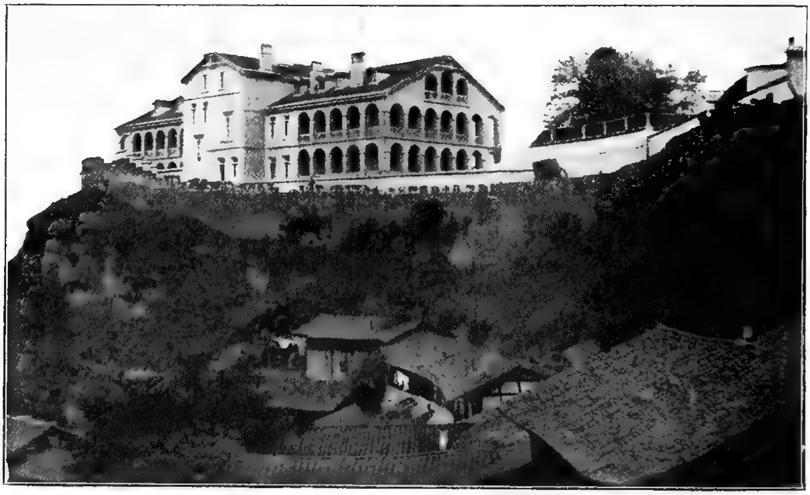


FIG. 342.—Methodist Episcopal Hospital for Men, Chungking.

The length through the central corridor to the outside of each veranda is 136 feet and the width of each wing 55 feet with an 8-foot veranda on three sides of each wing. Ten-foot corridors run the entire length of the building, three in all, which centre in the 30 x 35 ventilating shaft in the centre. This shaft extends from the basement to the roof through the four stories and is topped by a skylight, which can be opened or closed. The main staircase is built in easy ascent around this shaft, and consists of seven flights of stairs with a 10 x 10 foot landing for each. The doors, windows, and floors are built of "ba-mu," which is harder than pine and lighter in colour than oak, with the exception of the fourth floor, which is made of pine.

It is finished in oil and native "kwang-iu" or varnish.

Each floor is connected with speaking-tubes, which have been found a great convenience. The food and water is carried from the basement to each floor in an elevator. Gongs on each floor take the place of electric call-bells. The basement contains kitchen, storeroom, dining-room, wash-house, shower bathroom, laundry room, gymnasium, strong room, and morgue.

The second floor has three medical wards, three private rooms, reception-room, office, chapel, two bathrooms, drug-room, laboratory and museum, and dental room.

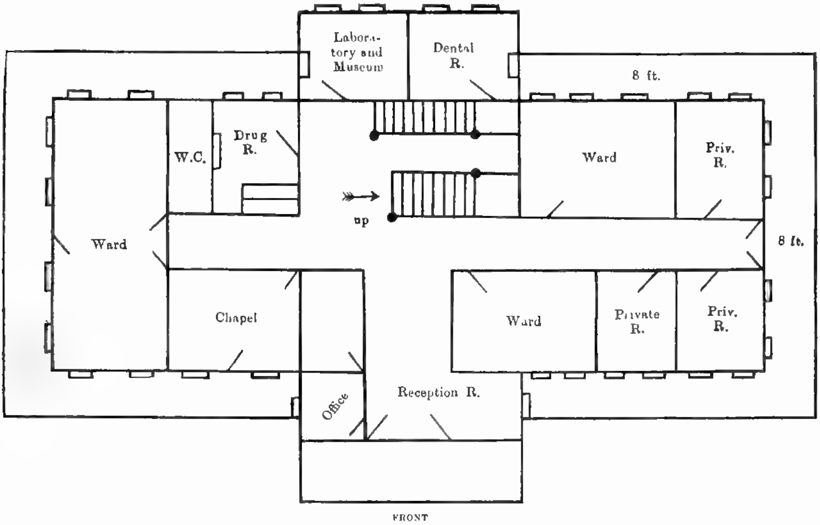


FIG. 344. Plan of the Methodist Episcopal Hospital for Men, Chungking.

The third floor contains three surgical wards, eye ward, three private rooms for foreign patients, two private rooms for Chinese patients, sterilising-room, dressing- and anæsthetic room, operating-room, two bathrooms, and lecture-room for medical students.

The fourth floor has one large ward, two bathrooms, linen closet, dark room, two private rooms, four rooms for nurses, and contagious ward half-story higher than the others.

The building, the arrangement of which is after the style of "Hunt's Block" Guy's Hospital, is roughly divided into three portions—a central block and two wings; the central block has three floors and the wings have two. The total length is 184 feet by 60 feet wide.

The second floor of the central block is at present unfinished; beams are laid down, but funds would not permit us to put down the floor or finish the ceiling. We hope later on to divide this into private rooms for better-class patients.

West Wing.—The west wing is devoted entirely to wards for male patients, and as the upper and lower male wards as well as the female ward are exactly similar in construction and arrangement, the present description will apply to all three.

The wards are 62 feet long and 42 feet wide; there are five windows on the north side and five on the south side; each window is 3 feet wide by 9 feet high. The ward is divided from east to west by the central wall, which is 2 feet thick; thus there are two divisions, each having a width of 20 feet. This central wall is arched opposite the five windows, but these arches, with the exception of the two end ones, do not extend to the ground. At the east and west end of the ward, where the arches come down to the floor, there is a passage way 6 feet wide, so that there is easy communication between the two divisions. The other arches correspond to and are of the same size as the windows, so that one gets the advantage of two wards side by side without the loss of room for a passageway, and one lavatory does for both, and in addition the prevailing summer breeze, which does much to temper the summer heat, is able to pass through the building.

There are verandas on three sides, and the two end front towers contain lavatories below a water cistern just underneath the level of the roof above. These cisterns collect water from the roof, which by means of taps and pipes can be used in the wards.

East Wing.—The upper story of the east wing, as already stated, is the women's ward, and is arranged in the same manner as the men's ward on the opposite side of the building. The ground floor on the southern side is devoted entirely to out-patient work. The northern side forms the dispensary, drug storeroom, clothes and bedding storeroom, students' classroom, and the doctor's private office. The ground floor of the sanitary tower is divided into two portions: the smaller forms the dark room for examining eyes, while the larger half is used as a dressing-room for out-patients.

Out-houses.—On either side of the entrance to the compound are two small houses: the one on the right is a medicine shop, where patients who wish to obtain more medicine without seeing the doctor, can buy what they want at other than dispensary hours. On the left is the gatekeeper's lodge.

The out-houses behind the main building comprise the kitchen, bathrooms, wash-house, servants' and students' bedrooms; the wood house is beyond. This building is connected to the main structure by a covered way.

MOUKDEN HOSPITAL.

The Hospital Building.—Our hospital occupies a conspicuous position, looking south over the placid waters of what is called the "Small River." "The approach to the hospital is by gateways, opening through a handsome wall-screen, arch-shaped, with stone panel in the centre arch, bearing the Chinese characters '*Sheng Ching Shih I Yuan*' (Moukden Free Hospital)."

Out-door Department.—"The dispensary department consists of a double-storied building, with projecting roof, showing three gables fronting south. The whole of the downstairs is devoted to out-door work. An eastern entrance leads into a commodious waiting-room, 45 feet by 28 feet, with an elliptic arched recess, 15 by 12 1/2 feet. The roof is finished in four arches of half timber work with plaster panels. The floor is laid with Tangshan plain tiling."

"Opening from the waiting-room is the consulting-room, with the ophthalmic room adjoining, and immediately beyond is the dispensary, 26 feet by 19 feet, with exit door for out-patients. Crossing a corridor you enter the doctor's private room, adjoining which is a classroom and laboratory. The upper story consists of a large lecture-room, medicine and napery storerooms, and three dormitories for assistants and dispensers."

Work in the Lecture-room.—This entire building, including the waiting-room, is heated by a low-pressure steam plant. In spite of the fact that the winter of 1907–8 was specially cold and prolonged, it has proved thoroughly satisfactory and very economical. Our winter lasts over four months, the temperature frequently falling lower than 20° below zero Fahrenheit, and sometimes as far as —30°, so that fuel is a serious item in our expenditure.

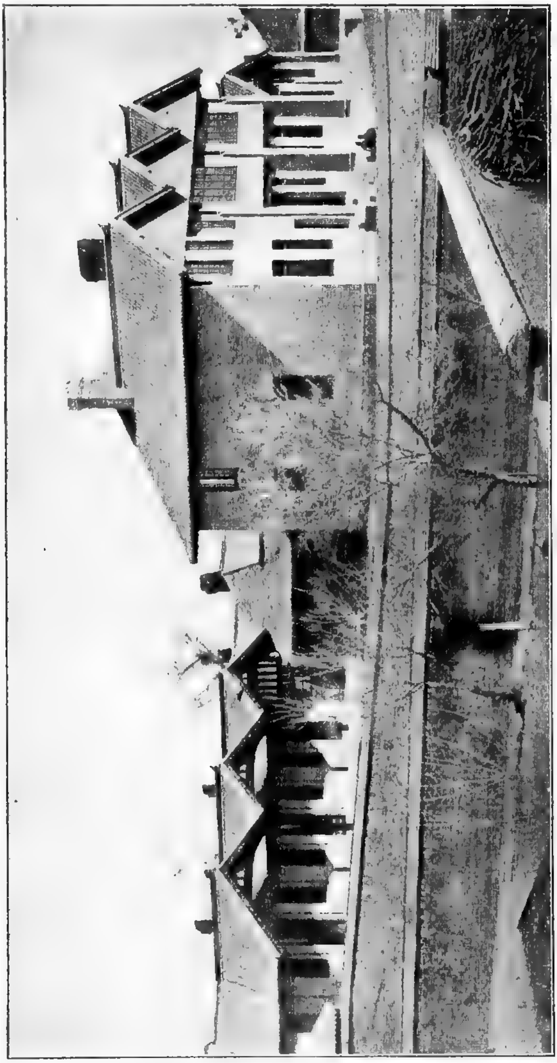


Fig. 345.—Moukden Free Hospital, dispensary in front. Only a small part of the wards are seen

In-door Department.—"The in-patient department is connected with the dispensary block by means of a corridor 220 feet long, with wards opening out alternately to right and left. The operating-room, bright, airy, roomy, lit on three sides by large plate-glass windows, and furnished with every necessary surgical appliance, occupies the first position on the right. A feature of one of the wards is a beautiful veranda, provided with a view to open air treatment, and covered by gable roofs matching the outdoor block."

The two wards north of the Munro Ward have uncovered verandas, and between all the wards paths and flower beds are being laid out, so that patients may walk

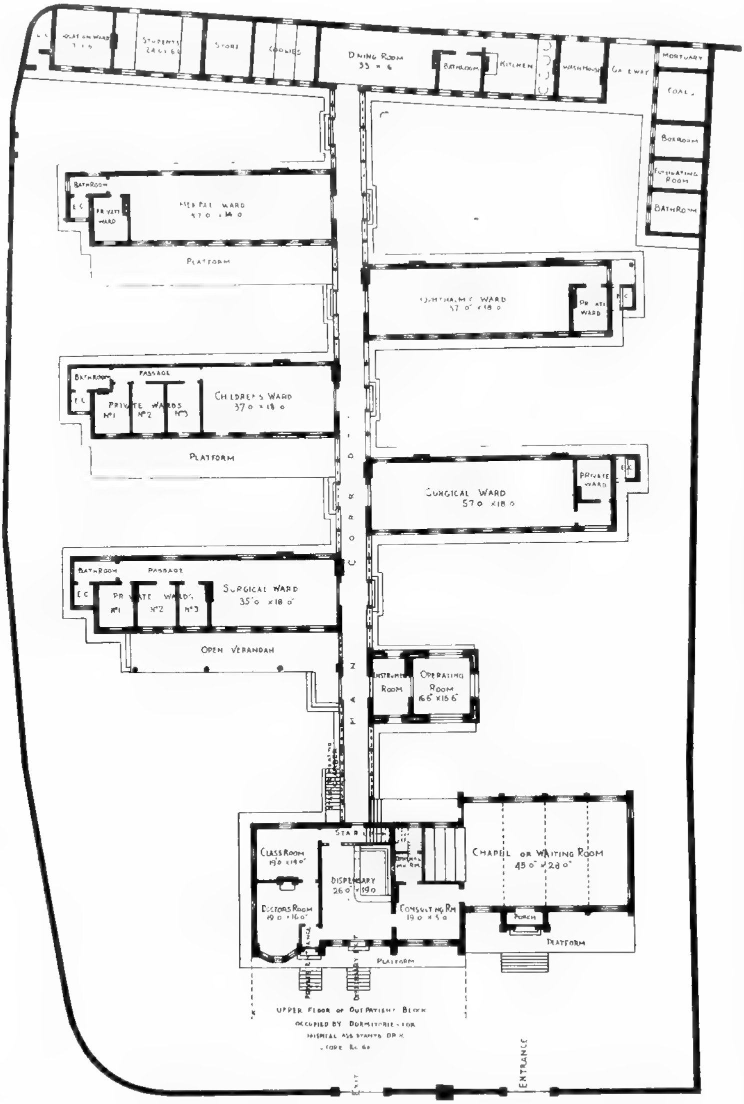


Fig. 546. Ground plan of the Moukden Free Hospital.

about and sit outside. All the wards have wooden floors and iron beds. At the north end of the corridor is a dining-room for all patients who are able to leave their rooms, and a warm comfortable bathroom, where we can give baths even in the coldest weather. There are other bathrooms which are used as well in the warmer weather

RHENISH MISSION HOSPITAL, YANGKOU.

Description of the New Hospital.

The one-storied building has a direction N. W. to S. E. All round is a raised platform of earth, 3 feet high, which, with the underground fundament, gives us a basement of about 5 feet high. This basement will be used for a storeroom for the many implements bought for the industrial department. The cement floor rests on one layer of bricks, arranged like the arches of a bridge, spanning between the fundament walls which separate the rooms above the floor. Under the large ward and verandas pillars have been erected, from which start the arches. Our object was to dispense with timber in the basement as it gives food for white ants, is an annoyance in case of inundation, and a danger in case of fire. The house contains a large ward, a day-room, a so-called "liegerhalle," and ten smaller rooms—see drawing from a block cut here. The ward has a height of 13.8 feet all round and in the middle of 22 feet. This gives, with the roof space, for a length of 52 feet and a width of 22 feet, 914 cubic feet and 52 square feet for the floor space of each of the twenty-two beds (the foot here meant is the Chinese measure of 35 cm.). Twelve larger windows, 8 feet high, and four smaller, give us a third of the area of the walls. The roof is supported by five arching bows, prevented from diverging by iron bars laid across. A ventilation roof whose sides are closed by shutters runs along the whole ridge of the roof. The day-room at the end of the ward will also be used as dining-room. The "liegerhalle," like the day-room surrounded by mobile shutters, is 10 feet wide and can accommodate twelve patients. Its direction toward the north makes it a cool place during the summer, and during the winter a protecting shelter against the north wind. At the corner formed by the day-room and the "halle" are seen a bathroom and a scullery. Under the roof of those rooms is an iron reservoir to contain our supply of rain-water.

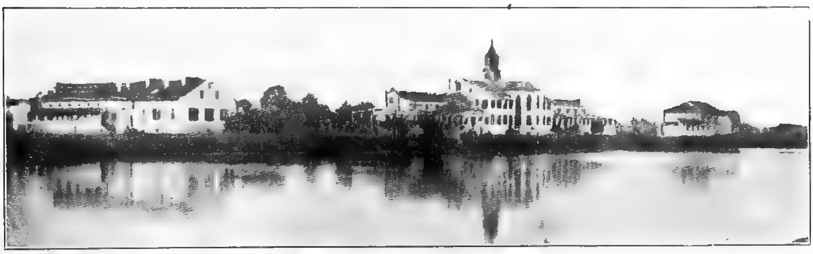


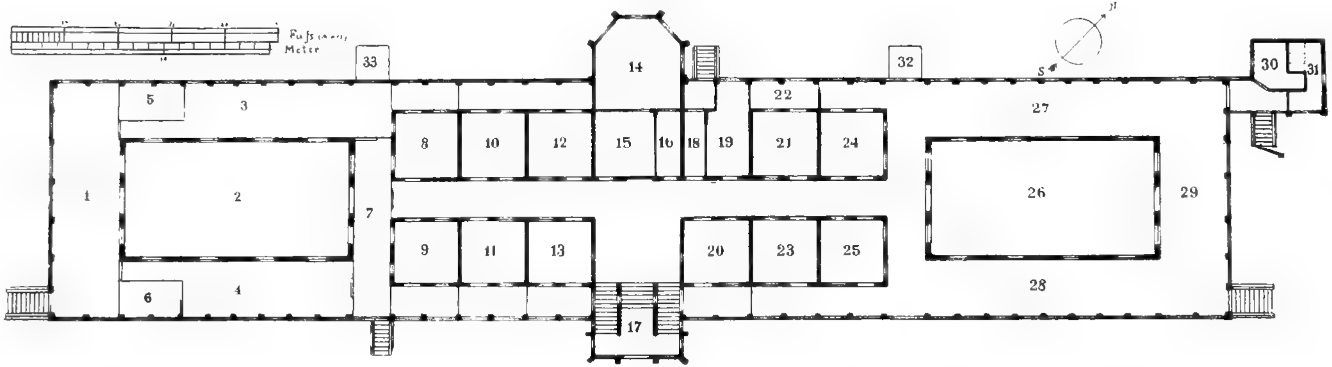
FIG. 347. Rhenish Mission Hospital, Tungkun, from the river.

Let us now go to the second portion of the building, separated from the first by a lobby 7 feet wide. The central corridor, looking toward the river, gives entrance, to our left, into a dressing-, and to our right into the ward-master's room. The latter can see all that is going on in the liegerhalle, and through a side window can at a glance inspect the whole ward. There are also bath, consultation, drug, instrument, and operation rooms; while there are three rooms, each provided with two beds, to be let to patients. A staircase leads into a roomy attic. No corners or angles are to be seen; everything has been rounded. Each door and window has an inlet for fresh air, in the form of an independent frame which can be raised or lowered. A large clock

Rhenish Mission Hospital at Tungkun.

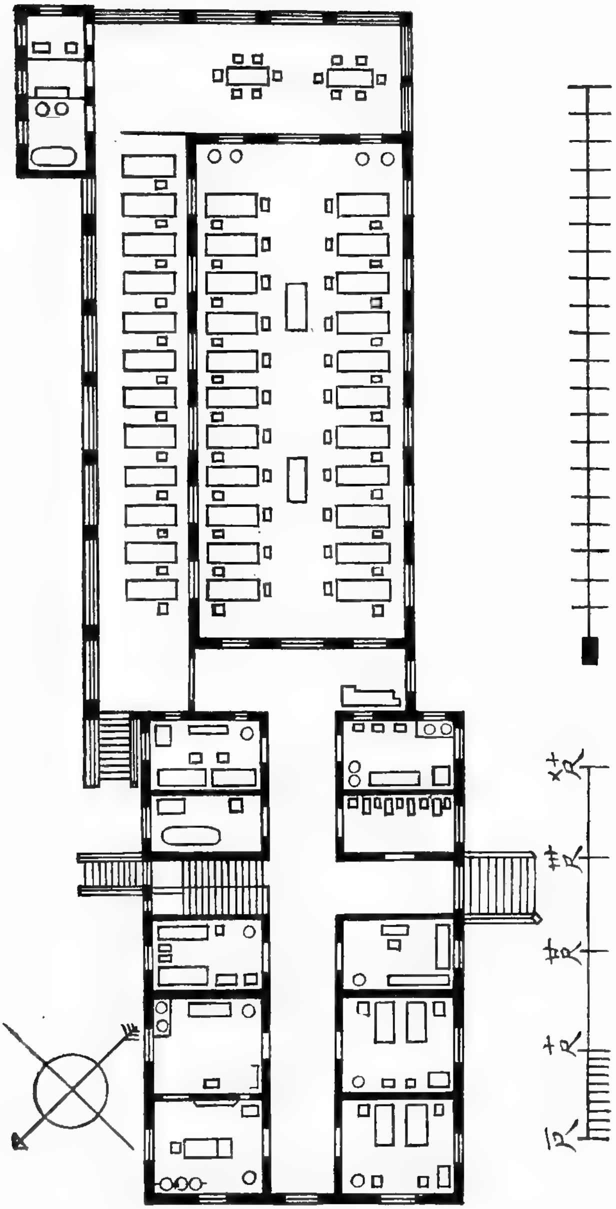
Groundplan of the second building.

River-side.



Town-side.

FIG. 348.



PLAN OF TUNG-KUN MEDICAL MISSIONARY HOSPITAL

FIG. 340.

with two faces is placed in the centre of the building and can be seen by the patients and by the hospital staff. All floors are cemented, except that of the ward, which is laid with glazed tiles from Hongkong. For warming purposes, chimneys are built in the walls. The iron tables and bed frames were made here. The patients are to sleep on short planks laid across the frame and are to get a mat and an earthenware head-cushion. Friends in Germany have kindly supplied us with blankets and clothing, so that we are now able to introduce the hospital clothing. Two wells provide us with water. Forty metres distant is another building containing the hospital kitchen, laundry, and rooms for cook and servants. The ground covered by the main building has an area of 616 square metres, that covered by the smaller one an area of 147 square metres. The sum expended, $9,175, gives for each bed an outlay of £20.

BAPTIST MISSION HOSPITAL AND DISPENSARY.

Hanyang Hankow, China.

The site consists of a piece of agricultural ground about three acres in extent, in the center of the Hanyang Valley at the foot of the Tortoise Hill, a place about equidistant from the main sections of the city. Though so conveniently situated, it has the great advantage of being in open country.

The whole compound has been enclosed with a wall, and more than half of it has been filled in with earth for a depth varying from 1 to 6 feet. This was expensive but necessary on account of the low-lying condition of the site.

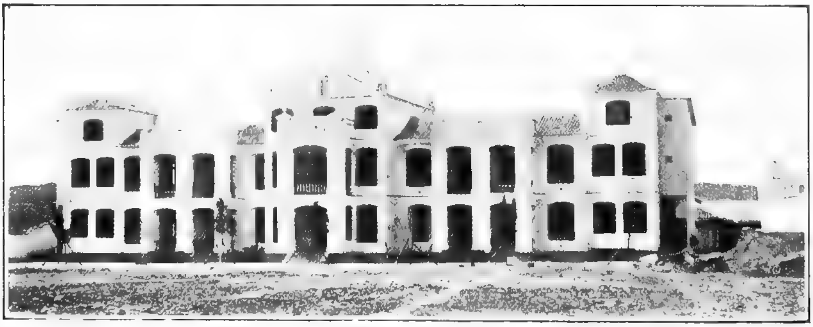
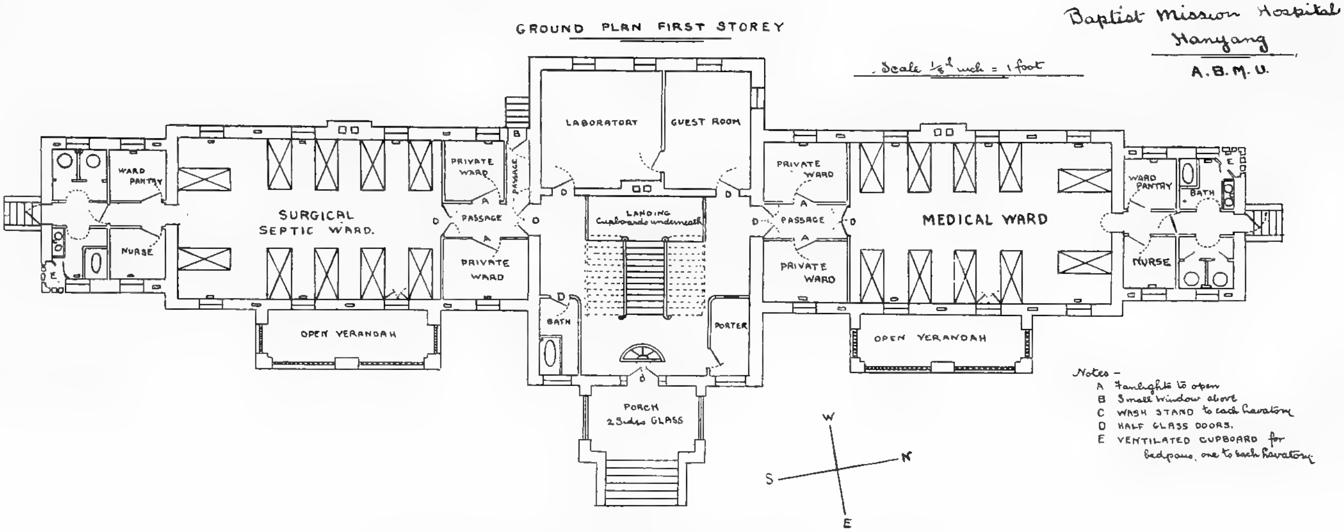


FIG. 350. American Baptist Mission Union Hospital, Hanyang.

The hospital presents a handsome appearance and is built of brick, covered with a hard finish cement of lime and black sand, well rubbed so as to give a marble effect to the whole. Its total length is 164 feet. The central portion has on the ground floor at the entrance a porter's room on one side and on the other a bathroom where patients receive their preliminary tubbing before entering the wards. Here also is a waiting hall and in the rear a dark room for ophthalmic work, closet for patients' clothes, offices, and laboratory.

This entrance leads immediately to the staircase which is wide and easy of ascent. Over the porch is a bright room enclosed with glass and opening on three sides so as to admit plenty of fresh air, and is well adapted for a few tuberculous patients. At the rear of the second story is the operation room, large and well lighted. A smaller



Baptist Mission Hospital
Hanyang
A.B.M.U.

Scale 1/8th inch = 1 foot

GROUND PLAN FIRST STOREY

Notes –
A Fanlights to open
B Small window above
C WASH STAND to each Lavatory
D HALF GLASS DOORS.
E VENTILATED CUPBOARD for
bedpans, one to each Lavatory.

FIG. 351.—Baptist Mission Hospital, Hanyang. Ground plan.

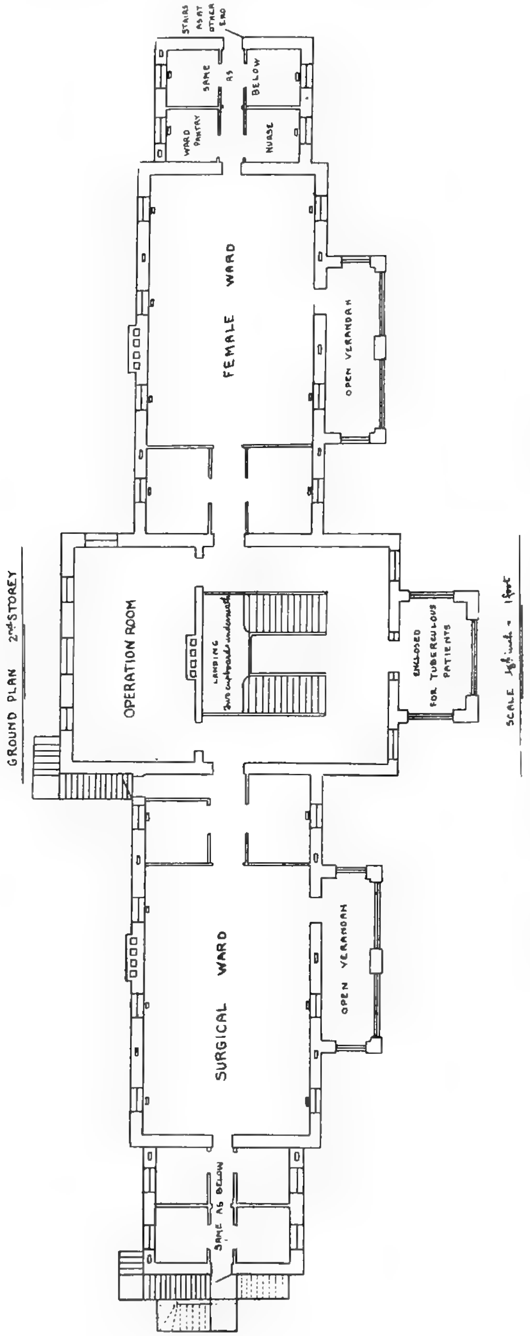


FIG. 352.—Baptist Miſsion Hospital, Hanyang. Ground plan.

staircase leads to the third story which provides an ample stock room, nurses' room, and an unfurnished ward intended for patients who wish to break off the opium habit.

From this central building project two wings, each with two stories and providing four large wards. Each ward unit contains a large room furnished with ten beds, a veranda, two private rooms with one bed each, a ward pantry, a linen-room, bathroom, etc. These latter rooms form a slightly smaller block at either end of the main building, three stories high, the topmost story providing healthy, airy rooms for assistants and nurses.

Service Block.—To the rear of the hospital and at one side are the service buildings consisting of kitchen, dining-room, granary, lamp, coal, and servants' rooms, together with a laundry and drying-room. These out-houses are connected with the main building by a covered way. In an isolated position at the rear of the compound is erected a neat looking building containing mortuary and latrine.

The out-patient block is situated at the front of the compound about 100 yards from the hospital and provides a preaching hall with a seating capacity of 120, separate waiting-room for women, and a convenient, up-to-date plant for a large out-patient work.

APPENDIX.

ON LABORATORY METHODS.

General Considerations. In dealing with the subject of laboratory methods we wish to do so from the purely practical point of view. We believe that a large number of our readers in China have had but little experience of the practical uses of those methods which are absolutely essential in the proper diagnosis and treatment of many of the diseases with which we are now dealing. We shall therefore attempt to set out as simply as possible the methods to be employed, placing before our readers in most cases a single method only. We do not profess that these are the only methods in common use, in some cases not perhaps even the best that could be given. They are, however, simple, easily used, and sufficient in each case to arrive at a correct diagnosis. Many of our readers are men whose time is already very fully occupied. May we remind such that the Chinese have themselves a special aptitude for this form of work, and with a little trouble one of their hospital assistants can be easily trained to practise the bulk if not the whole of these laboratory methods. Finally, may we be allowed to remind our readers that it is a scandal and a growing scandal that so much empirical diagnosis is done in many of our hospitals, which a little system would replace by accurate scientific methods. It is to this that we owe the great confusion in the "fevers" and some other diseases of China that still exists.

METHODS EMPLOYED IN THE EXAMINATION OF THE BLOOD.

1. **For Protozoal Organisms,** such as in malaria, relapsing fever, including the examination for kala-azar bodies.

Preparation of slides and cover-glasses.

It is essential for satisfactory examination of the blood that all glass slides and covers should be quite free from grease and dirt. This is easily accomplished as follows: Slides and cover-glasses should be boiled separately in a mixture of:

Bichromate of potash,	8 parts.
Sulphuric acid,	12 parts.
Water,	100 parts.

The cover-glasses should be dealt into the solution as cards are dealt from a pack. Boiling should be for twenty minutes. They are then washed in running water, or several changes of water, till all trace of the bichromate solution has disappeared and then stored in spirit.

The Puncture.—Blood is commonly obtained either from the lobule of the ear or from the finger. If the latter be chosen a turn of bandage sufficiently tight to compress the veins is taken round the finger, the spot to be punctured rubbed vigorously with a piece of wool dipped in spirit, and the puncture made with a sharp needle on the dorsal aspect of the finger near the base of the nail. The drop of blood which exudes is just touched with the flat of the glass slide, when sufficient of the blood remains on the slide for examination. Care should be taken not to let the slide actually touch the finger itself.

Examination of Fresh Blood.—A clean cover-glass is now placed lightly on the droplet of blood, which spreads itself out evenly under its weight. It is at once placed under the microscope, which should have a mechanical stage. The iris diaphragm of the substage condenser is gradually closed until the blood-corpuscles are clearly and evenly illuminated over the whole field and the slide examined by commencing at one corner of the cover-glass and working regularly up and down the slide, shifting it the breadth of one field after each length has been examined.

Spreading the Blood.—If, however, it is intended to stain the film the blood must be spread out in a very thin layer on the slide. To accomplish this as soon as the droplet of blood has been taken on the slide, the shaft of the needle used to do the puncture is pressed flat on the slide at right angles to the length of the slide in the droplet of blood, the blood runs along the needle and if this be moved steadily along the slide a thin and even film of blood is left behind. This is allowed to dry in the air.

Staining. Leishman's Process.—The stain (see below) is dropped on to the dry film from a drop bottle or with a fountain-pen filler and left for from half to one minute. To this is added, when this time has expired, twice the quantity of distilled water dropped on to the slide and well mixed with the stain by moving the slide about. The mixed stain and water is allowed to remain on the film for five minutes. The slide is then washed with distilled water and a drop of distilled water left on the film for about one minute. The slide is washed again with distilled water and put on end to dry.

Summary.

Leishman stain,	$\frac{1}{2}$–1 minute.
With twice as much water added,	5 minutes.
Water only,	1 minute.

When dry the film is mounted in Canada Balsam or may be examined indirectly with the 1/12 objective by putting a drop of immersion oil on the film.

Note About the Stain.—Leishman's stain ready prepared keeps extremely badly in the tropics. By far the best way is to get the stain in solid form such as the tabloids supplied by Messrs. Burroughs Wellcome & Co., and dissolve in pure methyl alcohol as required. The firm in question supplies methyl alcohol in sealed tubes for this purpose. In a hospital where blood examinations are frequently made a tabloid of Leishman stain dissolved in methyl alcohol will keep quite good till the stain is used up; 0.015 gram of stain is dissolved in 10 c.c. of methyl alcohol.

2. For Filarial Embryos.

Fresh Examination.—For this much thicker films of blood are required. Obtained in the same way by puncture, a much larger drop of blood is allowed to escape and, taken up on the slide, a cover-glass is applied and the slide is examined with the low power of the microscope, the light being stopped down. The embryo by its active movements causes a violent agitation of the blood-corpuscles in its neighbourhood. When this is observed the point is found and the higher power turned on.

To Stain the Embryo.—A thick film is made and dried in the air. When quite dry immerse the film downward in a vessel of distilled water to allow the hæmoglobin to dissolve out. The slide should not lie on the bottom of the vessel. Dry and fix in a mixture of alcohol and ether equal parts, for ten minutes or more, dry. Stain in a weak solution of hæmatoxylin (see Histological Methods). The slide may be examined from time to time to see how the staining is progressing. Wash. Immerse in rain (or tap) water for five minutes. Dry and mount in Canada balsam.

3. For Plague Bacilli.

Stained Specimens.—A film is made of a drop of blood, or of lymph obtained by puncture of the enlarged glands. Dry in the air, pass through the flame of a spirit lamp. Place on the film a drop or two of carbol fuchsin. Allow to stain for a few seconds, wash, dry, and mount in Canada balsam.

This rapid method distorts the blood cells but brings out very clearly the characteristic form of the bacillus (see Chapter III).

METHODS EMPLOYED IN EXAMINATION OF THE FÆCES.

1. For the Eggs of Metazoal Parasites.

Take a clean slide, place in the centre of the slide a drop of distilled water, take up on the blunt end of a match a small piece of fæcal matter about the size of a pin's head, and with the end of the match mix it well with the water on the slide.

A little practice will soon teach how much fæces should be mixed with the water to give a film not too thick for easy examination. Drop on the mixture of fæces and water a cover glass and examine with the low power (2/3 inch) of the microscope, shutting off most of the light by the substage iris diaphragm. After a little practice all the common eggs can be easily recognized with the 2/3 objective, but until this experience is acquired it is well to confirm with the 1/6 objective.

Note that with almost any light the thick-shelled egg of the ascaris can be recognized; the thin shelled ankylostome egg requires the substage light to be cut down very considerably. Care must be taken at first not to confound pieces of undigested vegetable and animal material with the eggs of worms, the former lack the well-defined regular shell contour that the latter possess.

To make permanent preparations of the eggs the fæces should be mixed with a 10 per cent. solution of formalin and ringed with Canada balsam.

2. For the Examination of the Smaller Worms Whole.

In the cases of the smaller nematodes, *e.g.*, ankylostomum, all the trematodes, and portions of the cestodes it is often desirable to clear the worm and make permanent preparations for examination.

In the smallest of all such as the ankylostome and the heads of the cestodes, it is sufficient to place them for a day or two in 2 per cent. formalin, then in glycerine and mount them in glycerine jelly. Such preparations should be ringed with Canada balsam.

To prepare the **larger trematodes** and mature segments of the cestodes wash thoroughly, place in weak hæmatoxylin solution in distilled water for four to five days, decolourise by transferring to 70 per cent. alcohol with 1 per cent. hydrochloric acid, and leave till sufficiently decolourised to show the internal organs. Wash for twelve hours in rain (or tap water). Place between two slides held together at the ends by elastic bands to keep the specimen flat and immerse in 70 per cent. alcohol for twenty-four hours. Wash excess of alcohol from the slides with a little absolute alcohol and then immerse in absolute alcohol for twenty four hours. Without removing from between the slides clear in creosote or xylol, immersing in the solution till quite transparent. Mount in Canada balsam.

A good example of a worm treated in this way is shown in the photograph, page 183.

3. More Detailed Methods of Preservation of Worms, Etc., (*Lieper's Method*).

Never put a worm into water always take it direct into normal saline. To keep alive for twelve hours, wrap them up in a piece of mesentery or peritoneum.

For all Worms.—Take a tube three-fourths full of normal saline, drop worms in, shake up so as to clean them, especially mouth parts.

Nematodes Only.

1. Into normal saline and shake.
2. Boil some 70 per cent. alcohol, and when just off the boil, drop the worms in one by one. This kills them rapidly, so that they stretch out and do not contract.
3. Put into 70 per cent. alcohol cold.
4. They can be stored in this for transport, or if you do not want to go on cleaning them.
5. To clear, take

Seventy per cent. alcohol,	95 parts.
Glycerine,	5 parts.

and put into tall glass. Drop worms in.

6. Stand glass with worms on top of incubator or other warm place, and allow alcohol to evaporate gradually till only pure glycerine is left. This takes about two days, and it is bad to hurry the process.
7. Worms should now be clear.
8. Mount in glycerine jelly. Melt this on slide, put worm on and let it sink in. Put on cover-glass, and hold over flame till jelly runs out. Let it cool, remove surplus jelly, and seal with gold size.

Trematodes.

(Fleshy flukes, see further on.)

1. Shake and clean in normal saline. Add equal quantity of sat. solution corrosive sublimate and shake at once. This should kill in extended position. If very large may use 10 per cent. formalin instead of $HgCl_2$.
2. Wash out corrosive with water (several changes or in running water), then in 70 per cent. alcohol—stop here if you like for transport—90 per cent. ditto, and then into creasote, one-half hour each.

3. To stain.

   A. Keep in 70 per cent. alcohol.
   B. To a flask of distilled water add a few drops of hæmalum to a portwine colour you can see through.
   C. Put worms in and watch from day to day; if it becomes clear, due to absorption of hæmalum, add some more.
   D. Decolourise in acid alcohol, in a watch-glass, examining under low power, until colour leaves parenchyma.
   E. Then leave in tap water till blue (internal organs).
   F. Then 50 per cent., 70 per cent. alcohol and creasote. Organs should be blue and parenchyma colourless.
   G. From creasote to carbol xylol and mount or into abs. alcohol and xylol, and then thin Canada balsam, and dry in incubator, and rim with gold size. Never use oil of cloves.

Fleshy Flukes.

1. Put worms alive between two slides and press to bursting point, tie slides together and drop at once into 90 per cent. alcohol.
2. Leave in till quite flat, then water and stain as above. [In weak stains a drop of thymol keeps down mould growth.]

Cestodes.

1. Collect in normal saline—then put in 70 per cent. alcohol for transport.
2. Transfer to a weak solution of hæmalum in weak glycerine whilst still alive.
3. Leave three or four days till stained—it should be deeply stained to stand decolourisation.
4. Decolourise in acid alcohol.
5. Flatten out by putting between two slides tied together, and put in spirit over night—then clear and mount like a section.

4. For the Examination of Intestinal Amœbæ.

The slide is prepared in the method already described for the examination of fæces, only that the film is made rather thinner in the search for amœbæ.

Where mucus is present in the stool a small portion of the mucus should be taken rather than the fæces. In tropical regions a warm stage is not as a rule necessary, elsewhere it greatly facilitates the search for the parasites as it promotes their amœboid movements. Logan has suggested the simplest form of warm stage in the shape of a piece of ordinary plate glass cut to the size of a microscopic slide; this is plunged in hot water, dried and placed under the slide on the stage of the microscope. The glass retains its heat for a considerable period. Another very simple form of warm stage can be made by taking a piece of copper about 18 inches long, at one end it should be somewhat smaller than the stage of the microscope and from this it tapers to a point at the other end. The broad end of the copper has a hole cut in it to correspond to the opening in the centre of the stage and it is laid on this under the slide while heat from a spirit lamp is applied to the small end.

No easy and satisfactory method of making stained preparations of amœbæ has yet been produced.

5. For the Examination of Cholera Bacilli.

One of the flakes from the dejecta is spread out with a little water on a slide, dried, and stained with carbol fuchsin as described under the examination of plague bacilli.

Simple Histological Methods.—The microtome should be considered almost as essential an equipment of the hospital as the microscope. In the case of not a few tumours and ulcers a microscopic section is essential to certain diagnosis. The whole process is easily carried through from start to finish by an assistant, the surgeon only having to examine the stained and mounted section.

The minimum requirements are:

A microtome and razor.
An oven and spirit lamp.
Embedding moulds.
Paraffin wax.
Alcohol.
Xylol.
Chloroform.
Clove oil.
Hæmatoxylin solution.
Mounted needles, slides, and covers.
A basin.
One dozen watch-glasses.

The Microtome.—We recommend as the microtome for ordinary use a simple form of the Rocking microtome of the Cambridge Scientific Instrument Co.

Cheaper instruments may of course be obtained, as may much better and more complicated pieces of apparatus. We recommend the Rocking microtome as being very simple, almost impossible to get out of order, and extremely easy to work. Razors for use may be obtained with the microtome as also may embedding moulds.

An oven is necessary to melt the wax, but there is no advantage at all in having a complicated and expensive piece of apparatus. A small tin oven raised on legs made by a Chinese tinsmith, large enough to hold three or four wide-mouthed two-ounce bottles is all that is required. The heat is generated by a glass spirit lamp, such as is used in testing urine and can be regulated by raising the lamp nearer to the bottom of the oven. Such a lamp burns with a steady flame for a number of hours, and with a little practice a fairly even temperature can easily be maintained.

Paraffin Wax. -For use in tropical regions a wax melting at 52° C. or 54° C. is the most suitable.

Hæmatoxylin solution for staining is prepared in the following manner:

Pure hæmatoxylin in tabloid or crystals,	4 grams.
Alcohol, 95 per cent.,	25 c.c.
Dissolve the hæmatoxylin in the alcohol and add to it saturated aqueous solution of ammonia alum	400 c.c.
Expose in an unstoppered bottle for	2 or 3 weeks.
Filter and add	
Glycerine,	100 c.c.
Alcohol, 95 per cent.,	100 c.c.

Stand in the light again for two weeks, filter and keep in a tightly stoppered bottle. The solution keeps well, and, so long as it is good, it has a purplish tinge.

The method of preparing the specimen is as follows: A piece of the tissue to be cut, preferably about the size of a pea, is passed through a series of bottles containing the following solutions; in each bottle it should be left for four hours or for as much longer as is convenient:

1. Fifty per cent. alcohol.
2. Strong spirit (about 90 per cent. alcohol).
3. Absolute alcohol.
4. Absolute alcohol.
5. Chloroform
6. Chloroform saturated with paraffin.

From the sixth bottle the specimen is transferred to a bottle of melted paraffin in the oven where it remains for two hours, and is then changed to a second bottle of melted paraffin for another two hours.

Then place the specimen in the embedding moulds surrounded with melted paraffin and cool quickly by putting in cold water.

Remove the block from the embedding moulds, trim with a sharp knife and fix on the specimen holder of the microtome with a little melted paraffin. Cut as thin sections as possible without tearing and, as a string is cut, transfer to water in a basin. The water should be as hot as the hand can comfortably bear. The heat spreads out the sections on the surface of the water. The best sections are chosen and with the help of a needle floated on to cover-glasses dipped in the water. The cover-glasses are placed on a flat dish with the section uppermost, and the dish put in the hot oven for half an hour. This fixes the section firmly to the slide. The staining and mounting is carried out as follows, the various solutions being poured into watch-glasses. The cover-glass with the section on it is immersed in each solution for a few minutes.

1. *Xylol* to dissolve out the wax.
2. *Alcohol* to wash out the xylol.
3. *Water* to wash out the alcohol.
4. *Hœmatoxylin solution* until sufficiently stained.
5. *Rain or tap water* to blue the specimen.
6. *Counter-stain* if desired.[1]
7. *Absolute alcohol* } to dehydrate.
8. *Absolute alcohol* }
9. *Clove oil.* Not essential if the alcohol is perfectly "absolute." } to clear.
10. *Xylol.*

Mount in Canada balsam.

Note: at no period of this process must the specimen on any account be allowed to dry.

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[1] Counter-staining can be best accomplished by the use of Van Gieson's stain. The cover-glass is picked up with a pair of forceps and dipped for about five seconds in the stain. Van Gieson's stain is made by adding to a saturated solution of picric acid sufficient of a 1 per cent. solution of acid fuchsin to produce a dark red colour

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